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GLOBAL DATA MONITORING REPORT

November, 1997

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Berkshire
RG12 2SZ

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

Dr. B. Macpherson
Head of Observation Processing and Monitoring Section
Data Assimilation
Meteorological Office
London Road
Bracknell
Berkshire
United Kingdom
RG12 2SZ

2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of aircraft reports (in AIREP/AMDAR code, including AIREPs, ACARs, AMDARs and ASDARs) received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR (in AIREP/AMDAR code, including AIREPs, ACARs, AMDARs and ASDARs) in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-11 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-11 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
6. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.| bias|	≥ 4 hPa	(pressure),
	≥ 5 m s^{-1}	(wind speed),
	≥ 30 degrees	(direction).
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CG2248	ALL	MSLP	SUR	52	52	100	0.0	0.0	0.0
CYBJ	ALL	MSLP	SUR	22	7	32	4.5	2.6	5.2
CYGR	ALL	MSLP	SUR	31	19	61	3.7	-5.6	6.7
CYLX	ALL	MSLP	SUR	27	13	48	1.4	-12.9	13.0
C6MD6	ALL	MSLP	SUR	24	0	0	5.6	5.4	7.8
DNHS	ALL	MSLP	SUR	24	0	0	1.3	-4.0	4.2
DOWVD2D	ALL	MSLP	SUR	59	0	0	3.3	5.1	6.1
ELDT6	ALL	MSLP	SUR	52	0	0	1.0	4.1	4.2
ELSU8	ALL	MSLP	SUR	47	0	0	2.0	5.1	5.5
EQUY	ALL	MSLP	SUR	24	3	13	1.2	13.1	13.2
J8EL6	ALL	MSLP	SUR	25	1	4	0.9	-5.9	6.0
MVQN8	ALL	MSLP	SUR	36	0	0	0.8	11.5	11.6
NYCQ	ALL	MSLP	SUR	28	18	64	1.8	-8.2	8.3
OZBL2	ALL	MSLP	SUR	39	0	0	1.9	-5.9	6.2
PEXU	ALL	MSLP	SUR	46	5	11	4.7	-4.8	6.8
UHBS	ALL	MSLP	SUR	21	12	57	1.6	-0.6	1.7
UHVW	ALL	MSLP	SUR	30	0	0	0.9	4.8	4.9
UQDB	ALL	MSLP	SUR	36	0	0	1.6	6.0	6.3
VCTD	ALL	MSLP	SUR	24	22	92	1.5	-11.7	11.9
VOXZ	ALL	MSLP	SUR	54	43	80	4.6	-7.4	8.7
V2XO	ALL	MSLP	SUR	55	1	2	1.4	-4.2	4.5
V7AW8	ALL	MSLP	SUR	33	0	0	1.0	4.2	4.3
3EIY6	ALL	MSLP	SUR	26	0	0	1.4	11.5	11.6
3ESQ5	ALL	MSLP	SUR	26	0	0	1.5	4.1	4.3
3FGN3	ALL	MSLP	SUR	25	0	0	1.1	-5.2	5.3
3FKZ3	ALL	MSLP	SUR	58	0	0	1.4	4.7	4.9
3FTJ4	ALL	MSLP	SUR	24	0	0	1.1	10.9	10.9
3FUD4	ALL	MSLP	SUR	20	0	0	0.9	-4.6	4.7
9MCP6	ALL	MSLP	SUR	32	0	0	1.0	8.1	8.2
9VIH	ALL	MSLP	SUR	28	0	0	1.5	-6.1	6.3
9VPK	ALL	MSLP	SUR	21	0	0	1.4	8.9	9.0
WIND SPEED									
DPUF	ALL	SPEED	SUR	68	0	0	5.6	5.4	7.8
DUQM	ALL	SPEED	SUR	35	2	6	5.8	7.9	9.8
JKOW	ALL	SPEED	SUR	20	0	0	5.4	7.2	8.9
LACG4	ALL	SPEED	SUR	42	0	0	2.3	5.1	5.6
LAHE2	ALL	SPEED	SUR	24	0	0	5.4	8.7	10.3
LAJY2	ALL	SPEED	SUR	25	0	0	3.5	5.9	6.8
LAVX4	ALL	SPEED	SUR	34	0	0	3.3	5.5	6.4
OWEB2	ALL	SPEED	SUR	21	0	0	3.2	5.7	6.5
PEXU	ALL	SPEED	SUR	33	1	3	5.5	9.7	11.2
PGDF	ALL	SPEED	SUR	40	0	0	5.9	5.8	8.2
PJNP	ALL	SPEED	SUR	24	3	13	6.4	5.1	8.1
UFSZ	ALL	SPEED	SUR	20	0	0	3.7	5.3	6.5
VJBF	ALL	SPEED	SUR	29	0	0	4.7	6.4	7.9
VRVI3	ALL	SPEED	SUR	42	0	0	3.4	-6.7	7.5
XYKX	ALL	SPEED	SUR	20	0	0	2.0	5.4	5.8
3BIX	ALL	SPEED	SUR	20	1	5	3.1	6.4	7.1
3ELC6	ALL	SPEED	SUR	62	0	0	4.2	10.3	11.1
3FSL4	ALL	SPEED	SUR	23	0	0	1.6	6.9	7.1
4PLB	ALL	SPEED	SUR	51	0	0	2.7	5.3	6.0
8PNH	ALL	SPEED	SUR	59	1	2	5.4	11.3	12.6
9MBK	ALL	SPEED	SUR	31	0	0	5.5	5.4	7.7
WIND DIRECTION									
LAHG2	ALL	DIRN.	SUR	27	0	0	38.8	31.4	49.9
NBTM	ALL	DIRN.	SUR	34	0	0	95.1	44.2	104.9
PEXU	ALL	DIRN.	SUR	32	1	3	69.4	34.4	77.5
VOLG	ALL	DIRN.	SUR	39	0	0	110.5	20.5	112.4
45143	ALL	DIRN.	SUR	98	0	0	29.1	56.2	63.3
46131	ALL	DIRN.	SUR	64	0	0	80.3	-8.5	80.7
46181	ALL	DIRN.	SUR	73	0	0	28.0	-44.9	52.9

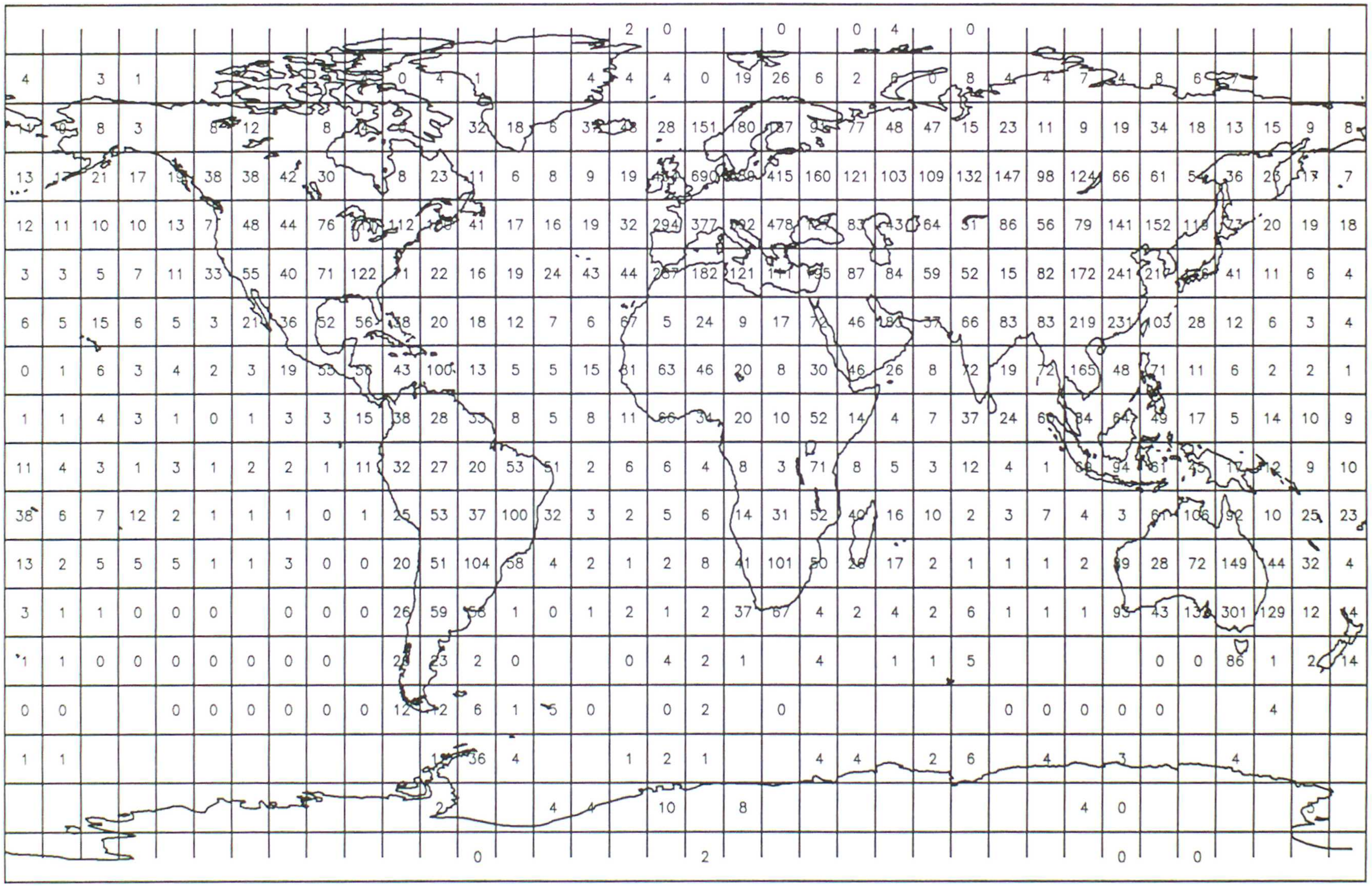
AVAILABILITY – SHIP/SYNOP – NOVEMBER 1997

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 18816

FIGURE 1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13 17 21 17 19 38 38 42 30 8 23 11 6 8 9 19 434 690 389 415 160 121 103 109 132 147 98 124 66 61 54 36 26 17 7
12 11 10 10 13 7 48 44 76 210 112 128 41 17 16 19 32 294 377 192 478 127 83 143 64 51 86 56 79 141 152 118 73 20 19 18
3 3 5 7 11 33 55 40 71 122 71 22 16 19 24 43 44 267 182 121 141 135 87 84 59 52 15 82 172 241 217 136 41 11 6 4
6 5 15 6 5 3 21 36 52 56 138 20 18 12 7 6 67 5 24 9 17 72 46 183 37 66 83 83 219 231 103 28 12 6 3 4
0 1 6 3 4 2 3 19 55 56 43 100 13 5 5 15 31 63 46 20 8 30 46 26 8 72 19 72 165 48 71 11 6 2 2 1
1 1 4 3 1 0 1 3 3 15 38 28 33 8 5 8 11 66 34 20 10 52 14 4 7 37 24 60 84 64 49 17 5 14 10 9
11 4 3 1 3 1 2 2 1 11 32 27 20 53 51 2 6 6 4 8 3 71 8 5 3 12 4 1 68 94 61 45 17 12 9 10
38 6 7 12 2 1 1 1 0 1 25 53 37 100 32 3 2 5 6 14 31 52 40 16 10 2 3 7 4 3 61 106 92 10 25 23
13 2 5 5 5 1 1 3 0 0 20 51 104 58 4 2 1 2 8 41 101 50 26 17 2 1 1 1 2 89 28 72 149 144 32 4
3 1 1 0 0 0 0 0 0 26 59 56 1 0 1 2 1 2 37 67 4 2 4 2 6 1 1 1 93 43 138 301 129 12 14
1 1 0 0 0 0 0 0 0 28 23 2 0 0 4 2 1 4 1 1 5 0 0 86 1 2 14
0 0 0 0 0 0 0 0 12 12 6 1 5 0 0 2 0 0 0 0 0 0 4
1 1 1 36 4 1 2 1 4 4 2 6 4 3 4
2 4 4 10 8 4 0 5
0 2 0 0

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA : NOBS ≥ 20 , and one or more of the following:

1.| bias| ≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).

2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).
3.PGE ≥ 25.

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
16949	-34.4	66.1	ALL	MSLP	SUR	216	21	10	6.1	-2.3	6.6
17660	-39.1	-105.6	ALL	MSLP	SUR	158	0	0	1.5	-4.9	5.1
33953	-39.7	-6.6	ALL	MSLP	SUR	204	6	3	2.7	4.4	5.1
41523	11.5	-51.2	ALL	MSLP	SUR	414	0	0	2.2	4.2	4.7
47602	83.5	-85.5	ALL	MSLP	SUR	474	145	31	8.8	2.7	9.2

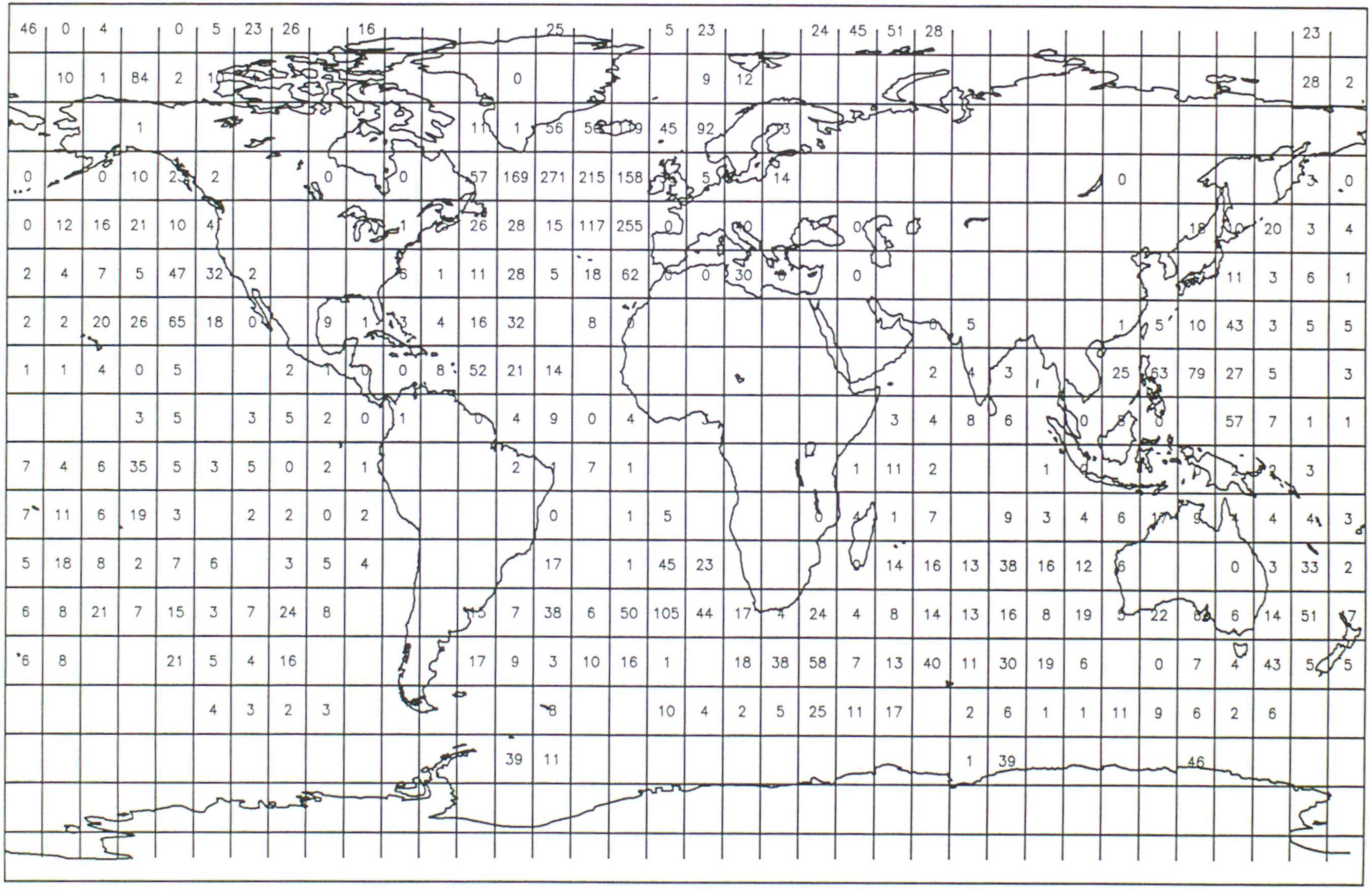
AVAILABILITY – DRIFTER – NOVEMBER 1997

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5418

FIGURE 2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1 11 1 56 56 119 45 92 3
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0 12 16 21 10 4 1 26 28 15 117 255 0 0 0 18 0 20 3 4
2 4 7 5 47 32 2 6 1 11 28 5 18 62 0 0 30 0 0 11 3 6 1
2 2 20 26 65 18 0 9 1 3 4 16 32 8 0 0 5 1 5 10 43 3 5 5
1 1 4 0 5 2 1 0 0 8 52 21 14 2 4 3 25 63 79 27 5 3
3 5 3 5 2 0 1 0 4 9 0 4 3 4 8 6 0 8 0 57 7 1 1
7 4 6 35 5 3 5 0 2 1 2 1 7 1 1 11 2 1 0 2 3
7 11 6 19 3 2 2 0 2 0 1 5 0 4 1 7 9 3 4 6 17 9 4 4 41 3
5 18 8 2 7 6 3 5 4 17 1 45 23 0 14 16 13 38 16 12 6 0 3 33 2
6 8 21 7 15 3 7 24 8 15 7 38 6 50 105 44 17 4 24 4 8 14 13 16 8 19 5 22 66 6 14 51 17
6 8 21 5 4 16 17 9 3 10 16 1 18 38 58 7 13 40 11 30 19 6 0 7 4 43 5 5
4 3 2 3 8 10 4 2 5 25 11 17 2 6 1 1 11 9 6 2 6
39 11 1 39 46

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.| bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60437	36.3N	2.8E	981	S8	40	1	3	15	2.0	-6.8	7.1
60445	36.2N	5.4E	1081	S8	109	0	0	9	1.0	4.8	4.9
60468	35.6N	6.2E	1052	S8	90	90	100	0	0.0	0.0	0.0
60476	35.4N	7.2E	1116	S8	34	20	59	12	5.6	11.6	12.9
60511	35.3N	1.4E	1127	S8	110	110	100	0	0.0	0.0	0.0
60535	34.7N	3.3E	1144	S8	69	0	0	10	2.1	-5.8	6.2
60571	31.6N	2.2W	773	S8	110	0	0	5	1.0	-4.5	4.6
60670	24.6N	9.5E	1054	S8	107	0	0	98	1.6	8.6	8.7
61233	15.2N	7.3W	265	M	82	1	1	0	0.9	-4.3	4.4
62402	26.2N	32.7E	77	M	23	23	100	0	0.0	0.0	0.0
63333	11.1N	39.7E	1916	MS	78	1	1	14	2.5	6.3	6.8
63402	7.7N	36.8E	1577	MS	49	2	4	4	1.2	-9.9	10.0
63451	8.7N	39.0E	1876	MS	50	3	6	10	2.1	-4.6	5.1
63453	8.8N	39.8E	1062	S	56	4	7	11	1.2	12.4	12.5
63478	5.1N	44.6E	320	MS	50	0	0	0	1.1	7.8	7.9
68014	19.6S	18.1E	1411	S8	87	0	0	30	1.4	-4.4	4.6
68350	26.7S	27.1E	1350	S8	30	9	30	30	2.7	1.5	3.1
68396	26.5S	31.3E	641	S8	44	0	0	7	1.5	4.7	4.9
68442	29.1S	26.3E	1354	S8	116	0	0	12	1.3	-5.3	5.5
68488	28.4S	31.1E	1279	S8	80	80	100	0	0.0	0.0	0.0
68752	32.8S	27.4E	524	S8	115	0	0	11	1.0	-8.1	8.2

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
24382	66.4N	143.2E	196	MS	59	0	0	32	3.3	4.9	5.9
24671	63.9N	135.9E	402	MS	97	4	4	58	4.4	6.8	8.1
30320	56.9N	105.7E	669	MS	53	53	100	0	0.0	0.0	0.0
30554	54.5N	113.6E	995	MS	56	1	2	16	2.5	10.0	10.3
31253	54.7N	128.9E	357	MS	119	2	2	4	2.6	-4.2	4.9
31474	51.6N	133.3E	384	MS	111	0	0	40	3.2	4.5	5.5
35173	51.6N	69.8E	620	MS	57	57	100	0	0.0	0.0	0.0
36020	52.5N	80.2E	168	M	20	7	35	65	6.5	0.8	6.5
40701	39.3N	44.4E	1470	MS	80	0	0	16	1.1	8.0	8.1
40710	37.9N	47.5E	-9999	M	83	0	0	52	2.4	4.2	4.8
40743	36.2N	57.7E	941	MS	113	0	0	1	1.3	-4.6	4.8
40762	35.3N	59.2E	1333	MS	114	35	31	12	1.0	-13.5	13.5
40763	35.2N	58.5E	1060	MS	41	1	2	5	1.6	-5.6	5.8
40783	32.4N	49.7E	1972	MS	79	0	0	3	1.4	-5.1	5.3
40789	33.8N	55.1E	921	MS	72	2	3	17	1.9	9.3	9.5
40798	32.3N	50.9E	1991	MS	78	0	0	9	1.5	-7.2	7.4
40836	30.8N	51.7E	1880	MS	77	3	4	16	1.4	8.8	8.9
40859	29.0N	53.7E	1383	MS	75	1	1	15	1.2	9.9	10.0
41254	23.1N	57.7E	1755	S	88	88	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	MS	35	0	0	11	2.4	6.4	6.8
41466	13.7N	44.1E	1385	8	32	1	3	16	1.0	-6.1	6.2
44416	28.6N	81.6E	720	MS	76	1	1	4	1.6	4.0	4.3
44477	27.0N	87.4E	1445	S8	69	68	99	0	0.0	-4.9	4.9
51334	44.6N	82.9E	321	M	118	2	2	55	3.8	6.3	7.4
51379	44.0N	89.6E	794	M	119	0	0	16	2.5	5.0	5.6
51818	37.6N	78.3E	1376	M	118	0	0	19	3.4	4.1	5.3
52378	41.4N	102.4E	960	M	118	0	0	12	2.2	4.0	4.6
52602	38.8N	93.4E	2734	S	119	0	0	0	2.2	-5.2	5.6
53083	44.6N	114.2E	1183	M	119	0	0	42	2.5	4.4	5.1
53352	41.7N	110.4E	1377	M	119	0	0	47	2.6	5.3	5.9
53480	41.0N	113.1E	1416	M	118	0	0	25	2.6	4.4	5.1
53705	37.5N	105.7E	1185	M	119	0	0	6	2.3	4.1	4.7
54386	41.4N	128.2E	1018	M	114	1	1	20	2.7	5.4	6.0
54587	39.1N	123.2E	-9999	M	99	1	1	5	1.4	-4.8	5.0
56144	31.8N	98.6E	3185	S	111	1	1	7	1.9	-4.7	5.1

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
56287	30.0N	103.0E	629	M	118	0	0	41	1.9	4.3	4.7
56385	29.5N	103.3E	3049	S	117	0	0	26	1.6	-4.6	4.9
56444	28.5N	98.9E	3488	S	100	100	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	111	0	0	14	2.4	7.8	8.2
57006	34.6N	105.8E	1143	M	119	0	0	4	2.1	4.8	5.2
58445	30.3N	119.4E	1494	S	118	1	1	37	1.6	-4.7	5.0

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83214	10.3S	54.9W	285	MS	51	0	0	20	3.8	-5.1	6.4
83235	12.4S	46.4W	660	MS	74	0	0	11	1.3	6.5	6.6
83319	14.7S	52.4W	315	MS	62	2	3	0	1.3	-4.8	5.0
83332	14.1S	46.4W	950	MS	70	24	34	0	0.8	13.7	13.7
83408	14.3S	43.8W	556	MS	74	3	4	15	1.5	10.4	10.5
83423	16.7S	49.3W	729	MS	73	0	0	10	1.2	-5.0	5.1
83488	17.8S	42.9W	1097	MS	71	70	99	0	0.0	-5.2	5.2
83531	18.6S	46.5W	896	MS	75	0	0	8	1.0	-6.7	6.8
83587	19.9S	43.9W	850	MS	76	1	1	12	1.0	-6.9	7.0
83773	23.1S	48.9W	793	S	36	0	0	8	1.2	-5.3	5.4
84401	5.2S	80.6W	55	MS	83	0	0	2	1.5	5.2	5.4
84425	5.9S	76.1W	184	MS	62	0	0	3	1.5	4.1	4.4
84455	6.5S	76.4W	282	M	62	0	0	0	1.5	6.9	7.1
84472	7.1S	78.5W	2622	S	41	0	0	12	1.8	-5.7	6.0
84501	8.1S	79.0W	30	MS	86	2	2	2	1.5	5.3	5.5
84542	9.4S	77.6W	2760	S	33	0	0	0	2.1	4.5	5.0
84686	13.6S	72.0W	3249	S	95	0	0	2	2.0	-5.2	5.6
84782	18.1S	70.3W	469	MS	81	0	0	2	2.0	9.8	10.0
85141	14.5S	67.6W	202	M	47	0	0	64	2.2	4.8	5.3
85312	19.8S	63.9W	992	S	35	2	6	9	2.3	-10.8	11.0
85394	22.8S	64.3W	381	MS	30	0	0	7	2.5	4.1	4.8
85406	18.3S	70.3W	58	M	118	0	0	6	1.6	7.4	7.6
85418	20.5S	70.2W	48	M	116	0	0	0	1.6	4.5	4.8
85442	23.4S	70.4W	135	M	119	0	0	3	1.7	5.2	5.5

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71882	51.0N	118.2W	443	MS	118	0	0	29	3.0	4.7	5.6
71891	50.2N	121.6W	229	MS	118	0	0	0	3.2	4.0	5.1
76118	30.4N	109.7W	1040	MS	21	0	0	10	1.1	-9.6	9.7
76625	20.6N	100.4W	1813	MS	40	0	0	8	1.0	-7.9	8.0
76632	20.1N	98.7W	2417	MS	30	0	0	97	1.0	-5.1	5.2
76634	20.1N	98.4W	2135	MS	77	0	0	88	1.2	-4.8	4.9
76658	19.2N	103.7W	494	MS	23	0	0	0	1.3	6.7	6.8
76762	17.5N	99.5W	1865	MS	39	39	100	0	0.0	0.0	0.0
76775	17.1N	96.7W	1550	MS	40	1	3	3	1.1	4.5	4.6
76845	16.7N	92.6W	2276	MS	76	76	100	97	0.0	0.0	0.0
78627	15.3N	91.5W	1901	S	45	0	0	2	0.9	4.6	4.7
78718	14.4N	87.6W	626	MS	22	22	100	36	0.0	0.0	0.0

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94328	22.4S	133.6E	623	M	102	0	0	94	1.1	6.1	6.2
94955	41.6S	145.7E	684	MS	213	213	100	0	0.0	0.0	0.0

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
02045	67.8N	20.4E	408	M	99	99	100	0	0.0	0.0	0.0
04416	72.6N	38.4W	3207	S	43	28	65	37	3.9	5.3	6.6
11916	49.0N	19.6E	2008	S8	119	1	1	33	1.9	-4.1	4.5
16227	41.9N	13.6E	655	MS	103	93	90	0	0.8	-14.2	14.2
16549	39.1N	8.3E	12	MS	103	0	0	0	1.0	-4.3	4.4
16614	40.4N	21.3E	604	MS	41	0	0	2	0.9	-7.1	7.2

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	817	MS	72	72	100	24	0.0	0.0	0.0
89108	89.0S	0.3W	2754	S	96	0	0	8	4.0	5.2	6.6
89264	71.4S	68.9W	780	S	63	0	0	6	2.5	4.4	5.1
89345	89.7S	148.8W	620	S	99	76	77	0	3.5	-8.9	9.6
89606	78.5S	106.9E	3490	S7	108	28	26	0	7.2	-4.5	8.5
89744	74.0S	43.0E	3353	S	83	1	1	17	2.9	5.5	6.2
89774	73.4S	76.8E	2565	S	91	0	0	2	2.6	4.4	5.1
89828	74.5S	123.0E	3280	S	82	1	1	0	3.7	4.6	5.9
89860	74.2S	160.3E	1772	S	83	1	1	25	3.2	-8.8	9.4

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in $\mathrm{m\,s^{-1}}$

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 $\mathrm{m\,s^{-1}}$ Vector Wind

SELECTION CRITERIA :N REP ≥ 20

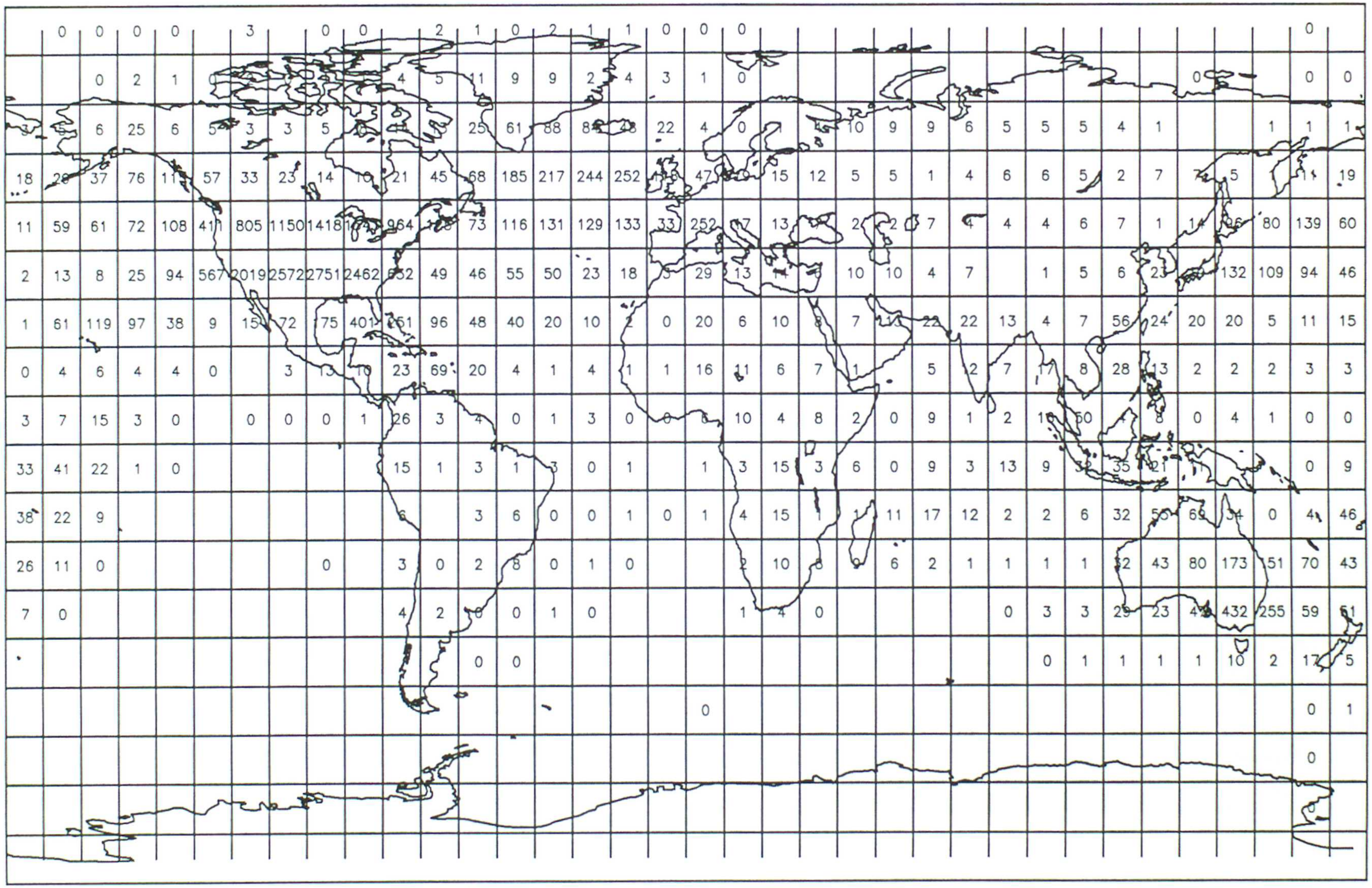
NB: US ACARs and ADS data are shown at the bottom of the table as US ACAR and ADS respectively.

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	128	12	16	2.3	0.9	123	1	100	1	15.6	-3.4
AAL	5561	1	1	1.7	0.1	5558	0	2	0	8.4	0.6
AAR	1946	1	2	1.8	-0.2	1923	0	3	0	9.3	0.9
ACA	1667	1	2	1.9	0.0	1694	0	2	0	7.3	0.5
ACI	54	6	6	1.5	1.0	52	0	2	0	8.0	1.8
AEA	526	1	100	3.2	1.8	517	0	10	0	11.0	0.9
AEL	444	2	75	2.1	-0.3	435	0	5	0	9.9	0.8
AEY	116	2	3	1.9	1.0	114	1	5	0	9.6	1.1
AFL	366	1	3	2.1	0.2	369	0	3	1	7.5	0.4
AFR	1723	2	10	1.8	0.2	1626	0	11	0	9.2	0.8
AIH	263	1	3	2.1	0.4	195	0	3	0	7.6	1.2
AJM	78	1	0	1.7	-0.1	56	0	4	0	12.1	-1.1
AMT	332	1	100	3.1	1.9	306	0	2	0	7.3	-0.2
AMX	305	1	3	1.9	0.4	304	0	6	0	10.5	0.9
ANA	1098	2	4	2.2	0.1	1094	0	4	0	10.5	0.5
ANM	29	0	0	1.3	0.3	29	0	0	0	5.6	-0.7
ANO	41	2	0	3.9	1.8	41	0	0	0	5.8	-0.7
ANZ	2162	3	5	1.9	0.1	2090	0	3	0	8.1	1.0
AOM	608	3	6	1.9	0.9	512	0	5	0	10.1	0.6
ARP	204	1	3	2.0	0.9	210	0	4	2	7.6	2.1
ASY	24	0	4	2.4	1.7	24	0	0	0	5.0	0.2
AUA	37	0	0	1.5	-0.7	37	0	3	0	7.6	0.9
AVA	418	2	4	1.8	0.4	421	0	4	0	9.6	1.0
AVN	42	5	7	1.6	0.1	41	0	5	0	7.1	-0.8
AXA	106	3	6	2.3	1.0	104	0	9	3	11.4	0.7
AZA	292	2	4	2.5	0.7	267	0	6	0	10.5	1.2
BAL	606	1	10	1.9	-0.1	570	1	11	0	9.3	0.7
BAW	1677	0	8	1.9	0.2	1623	0	9	0	8.6	1.0
BBB	36	3	11	2.2	0.3	29	0	0	0	8.1	2.3
BWA	247	1	100	2.7	1.8	236	0	7	0	9.8	0.2
CAL	1742	1	1	1.9	0.1	1745	0	3	0	9.5	0.8
CCA	134	1	7	2.7	-0.1	124	0	100	0	10.3	0.9
CDN	1559	0	1	1.8	0.5	1553	0	2	0	8.5	0.8
CES	288	0	1	2.0	0.6	273	0	3	0	10.9	0.3
CFC	28	4	21	2.7	0.7	28	0	18	0	9.2	-2.1
CFG	1290	0	2	1.8	-0.7	1280	0	3	0	9.2	0.5
CKS	245	2	3	2.8	1.9	237	0	3	0	8.6	1.2
CKT	164	2	9	1.8	0.9	151	0	8	0	8.8	0.5
CLX	309	0	1	1.7	-0.4	307	0	2	1	6.8	-0.2
CMI	646	1	2	1.7	0.8	649	0	2	0	8.5	1.2
CMM	307	6	6	1.8	0.2	295	0	3	1	8.9	1.2
COA	1405	1	3	1.9	0.5	1407	0	4	0	10.4	1.1
CPA	55	0	0	1.3	-0.3	55	0	2	0	6.9	0.6
CRL	397	1	3	1.9	0.6	375	1	4	0	9.8	0.9
CSA	24	0	0	1.5	-0.7	24	0	0	0	3.7	0.2
CSN	74	5	4	1.6	0.3	74	1	4	0	9.1	1.2
CTB	220	0	5	2.1	0.3	224	0	4	0	9.9	0.7
CTM	29	0	7	2.8	-0.1	28	0	21	0	8.0	3.5
CUB	469	0	11	2.9	1.6	457	1	11	0	12.8	0.9
DAL	4869	0	2	2.0	0.3	4886	0	2	0	8.6	0.7
DBY	140	0	1	1.2	-0.2	137	1	4	0	8.7	0.0
DHL	302	8	100	4.4	-2.7	302	0	69	0	12.5	2.4
DLH	3490	0	9	2.0	0.1	3467	0	12	2	8.2	1.0
DOA	51	0	0	1.1	-0.3	50	0	2	0	11.3	-0.4
EIA	251	1	5	1.8	0.2	247	0	9	1	10.8	1.5
ELY	155	1	6	1.8	-0.4	157	0	10	0	10.1	1.7
EVA	1606	1	2	1.9	-0.4	1620	0	3	0	9.8	0.7
EWW	165	0	100	2.9	1.2	165	1	100	0	15.2	2.4
FDX	940	1	2	1.9	0.7	932	0	2	0	8.8	0.6

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FFF	78	0	18	1.2	-0.1	78	19	88	0	42.4	-0.1
FIN	396	0	4	1.8	0.5	393	0	5	1	8.1	0.7
FJI	451	6	8	1.4	0.6	429	0	3	0	7.2	0.7
FOM	99	8	8	1.4	0.8	93	0	2	0	9.8	0.3
GAF	43	0	2	2.3	0.2	45	0	4	2	9.1	-0.8
GCO	72	0	1	1.6	1.1	72	0	0	0	7.2	-0.1
GHA	56	0	0	1.3	0.7	39	0	5	0	13.0	0.0
GIA	240	1	5	2.1	0.7	212	1	3	0	8.3	0.8
GTI	49	0	10	3.2	1.7	56	0	2	0	8.9	0.9
HAL	1644	1	2	1.8	0.4	1611	0	3	0	10.3	0.0
HLF	216	1	3	1.8	-0.5	208	0	4	0	9.4	-0.1
HRH	56	9	13	2.3	0.6	51	0	4	0	8.3	0.4
IBE	2330	1	10	2.2	0.6	2318	0	10	0	10.5	0.9
ICE	767	0	1	1.9	0.1	761	0	3	1	7.9	0.9
JAA	44	0	0	2.6	1.5	45	0	0	0	7.4	2.5
JAL	6318	1	1	1.8	0.3	6320	0	2	0	9.0	1.1
JAZ	43	0	0	2.1	1.4	44	0	5	5	7.6	-0.2
KAL	3528	1	2	2.0	-0.1	3479	0	3	0	9.5	1.2
KLM	3134	0	2	1.7	0.1	3113	0	2	0	8.2	0.6
LDA	245	0	10	1.7	-0.7	242	0	14	0	9.1	0.8
LDI	396	1	71	2.4	1.1	395	1	16	0	9.7	-0.1
LEI	238	2	4	1.6	0.4	231	0	5	0	9.2	1.2
LIB	375	0	2	1.8	0.8	365	0	5	0	9.8	1.2
LKR	22	0	9	1.6	0.4	23	0	13	0	8.0	-0.5
LOT	129	1	2	2.0	-1.3	130	0	2	0	8.0	0.6
LTU	919	1	2	1.7	0.3	905	0	4	0	9.2	0.7
MAS	316	0	1	1.9	-0.5	280	1	6	0	12.3	0.5
MDA	166	2	3	1.7	0.5	164	0	4	1	11.4	-0.1
MPD	181	0	2	2.3	1.6	179	0	3	0	9.0	0.6
MPH	952	0	2	1.7	-0.6	939	0	3	0	9.2	0.6
NCA	626	0	1	1.8	0.4	630	0	3	0	8.7	1.0
NWA	9321	1	2	1.9	0.6	9394	0	2	0	9.1	0.9
OAL	30	0	7	3.3	2.8	31	0	0	0	5.0	-0.7
PAC	184	1	6	2.0	0.4	177	0	7	0	10.2	0.4
PAL	959	1	1	1.7	-0.4	951	0	3	0	10.2	0.6
PAO	213	1	4	1.2	-0.1	213	0	3	0	8.2	0.9
QFA	1317	2	7	1.7	0.3	1297	0	7	1	9.7	0.4
RAF	134	0	0	1.8	0.8	134	0	72	0	8.7	1.0
RAM	80	0	4	1.8	-0.5	80	0	6	0	11.9	0.8
RCH	367	3	96	2.6	1.2	380	0	96	0	10.3	0.8
RJA	44	2	7	1.9	0.6	44	0	7	0	7.8	-0.1
RKA	125	0	0	1.9	0.6	80	0	1	0	8.1	0.2
ROY	36	0	6	1.9	0.4	36	0	11	0	13.9	0.5
RRR	87	3	14	2.2	0.9	89	0	13	1	6.8	1.3
SAA	346	1	2	1.7	-0.2	324	0	2	0	8.2	1.2
SAB	40	0	0	1.7	-0.1	40	0	3	0	8.5	0.1
SAS	1195	0	1	1.9	0.2	1193	0	2	1	7.3	0.3
SCX	207	2	2	1.5	0.8	176	0	1	0	8.6	-0.4
SIA	1245	0	2	1.8	-0.5	1219	0	4	0	9.3	0.5
SLR	141	1	13	1.9	-0.4	141	0	12	0	8.1	1.2
SOL	39	3	3	0.9	0.1	39	0	0	0	5.4	1.9
SPP	114	0	2	1.5	0.3	110	1	4	0	9.9	1.3
SVA	123	0	3	1.5	-0.1	126	1	100	0	13.3	2.9
SWR	116	1	3	1.4	0.0	118	0	3	0	8.1	1.5
TAP	585	1	3	1.7	-0.4	579	0	4	0	10.3	1.2
THA	393	1	2	2.0	-0.7	391	0	3	0	9.7	1.3
TOW	84	1	5	2.4	-0.4	88	1	3	0	8.2	0.3
TSC	26	0	4	1.7	0.9	26	0	4	0	6.5	0.1
TWA	1581	0	2	1.9	0.4	1576	1	3	0	9.2	0.5
UAL	11584	1	2	1.9	0.1	11590	0	2	0	8.3	0.8
ULE	33	0	36	1.8	0.3	33	0	36	0	11.3	2.4
UNS	348	1	14	1.9	0.5	342	0	13	0	7.0	1.0

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
UPS	891	1	8	1.7	0.2	898	0	8	0	8.1	0.3
USA	334	0	1	1.8	0.4	335	0	1	0	8.9	1.1
VIR	320	1	3	1.9	-0.4	306	0	3	0	9.1	0.9
VKG	53	0	6	2.5	1.6	51	0	8	2	9.6	1.7
VRG	42	0	0	1.9	1.2	38	0	0	0	8.1	2.3
VSP	225	1	3	2.0	0.5	221	0	5	0	11.5	0.8
WOA	108	0	6	2.0	0.8	109	0	7	0	10.0	1.9
AF	30	7	17	2.9	-1.7	28	0	21	4	19.6	2.1
AN	26856	2	0	1.9	0.2	26772	0	0	0	6.7	1.0
BA	17528	2	0	1.7	0.4	17468	0	1	0	6.6	1.2
IT	427	2	1	2.2	0.2	427	0	1	0	7.4	2.6
KL	12041	3	1	1.9	0.6	12034	0	0	0	6.2	0.7
LH	3819	1	2	1.9	0.3	3800	0	2	0	7.1	1.5
MK	5101	3	0	1.9	0.9	5063	0	51	0	7.4	1.9
QF	21267	5	0	1.7	0.4	21263	0	0	0	6.3	1.1
SA	1973	5	0	1.8	1.1	1971	0	0	0	7.0	1.0
SV	1680	3	100	1.8	0.3	1670	0	100	0	6.0	0.7
N	554	3	4	2.7	1.2	501	0	4	0	9.3	-0.2
ADS	619	0	0	1.0	0.0	619	0	0	0	7.0	0.9
US ACAR	478705	2	1	2.0	0.1	477893	0	2	0	6.6	0.9

MEAN DAILY COUNT OF AIRCRAFT 70 – 500 HPA FIGURE 3
NOVEMBER 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED



0 0 0 0 3 0 0 2 1 0 2 1 1 0 0 0 0
0 2 1 0 4 5 11 9 9 2 4 3 1 0 0 0 0
3 5 6 25 6 5 3 3 5 25 61 88 84 48 22 4 0 1 10 9 9 6 5 5 5 4 1 1 1 1
18 28 37 76 11 57 33 23 14 10 21 45 68 185 217 244 252 47 15 12 5 5 1 4 6 6 5 2 7 7 5 11 19
11 59 61 72 108 411 805 1150 1418 964 73 116 131 129 133 33 252 17 13 2 2 7 4 4 4 6 7 1 14 96 80 139 60
2 13 8 25 94 567 2019 2572 2751 2462 532 49 46 55 50 23 18 3 29 13 14 10 10 4 7 1 5 6 23 132 109 94 46
1 61 119 97 38 9 15 72 175 401 251 96 48 40 20 10 2 0 20 6 10 8 7 13 22 22 13 4 7 56 24 20 20 5 11 15
0 4 6 4 4 0 3 13 10 23 69 20 4 1 4 1 1 16 11 6 7 1 5 12 7 17 8 28 13 2 2 2 3 3
3 7 15 3 0 0 0 0 1 26 3 4 0 1 3 0 0 6 10 4 8 2 0 9 1 2 18 50 4 8 0 4 1 0 0
33 41 22 1 0 15 1 3 1 3 0 1 1 3 15 3 6 0 9 3 13 9 32 35 21 0 9
38 22 9 6 3 6 0 0 1 0 1 4 15 1 1 11 17 12 2 2 6 32 56 69 34 0 4 46
26 11 0 0 3 0 2 8 0 1 0 2 10 8 9 6 2 1 1 1 1 32 43 80 173 51 70 43
7 0 4 2 10 0 1 0 1 4 0 0 3 3 29 23 43 432 255 59 51
0 0 0 1 1 1 1 10 2 17 5
0 0 1
0
0

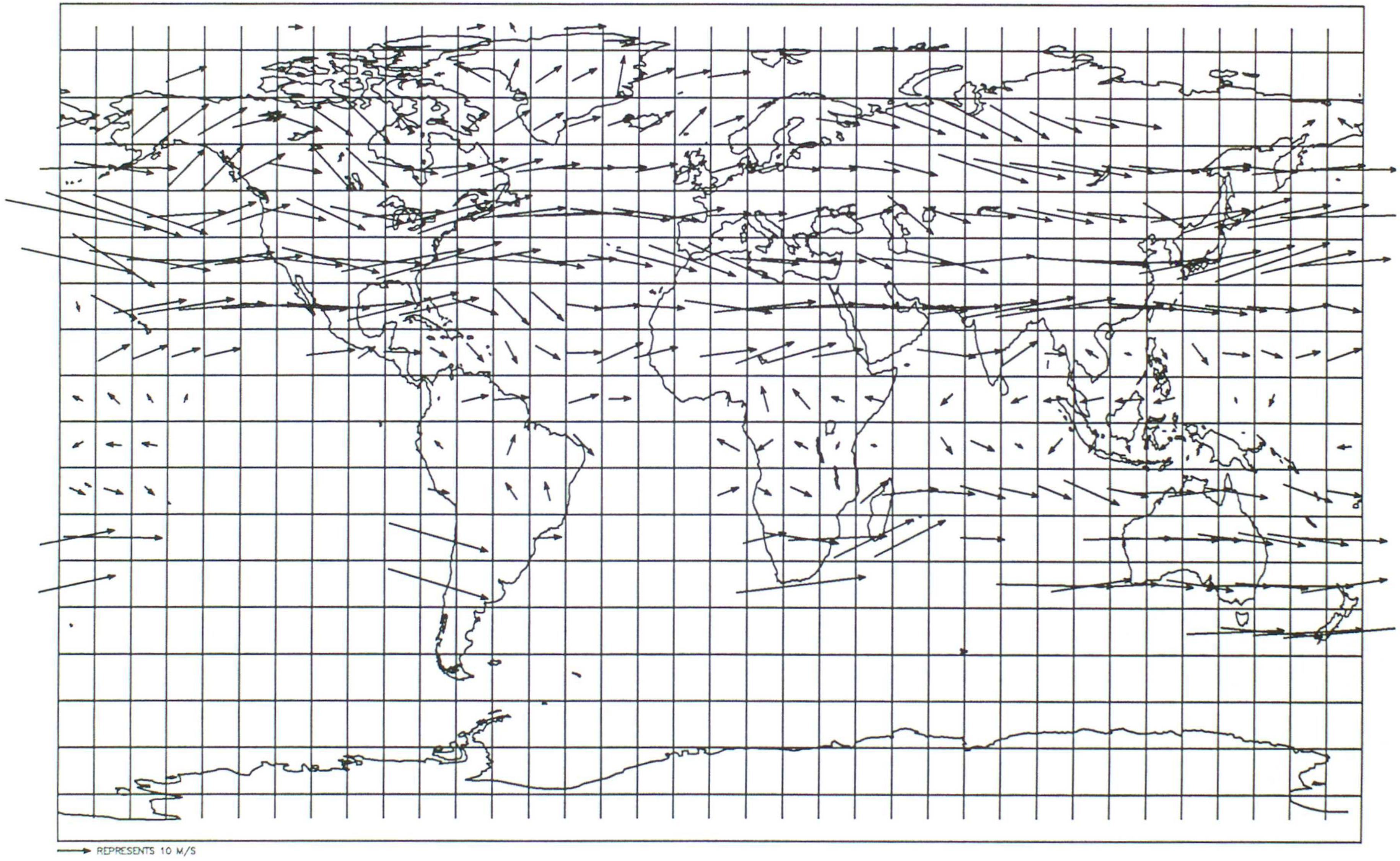
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA

FIGURE 4

NOVEMBER 1997

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



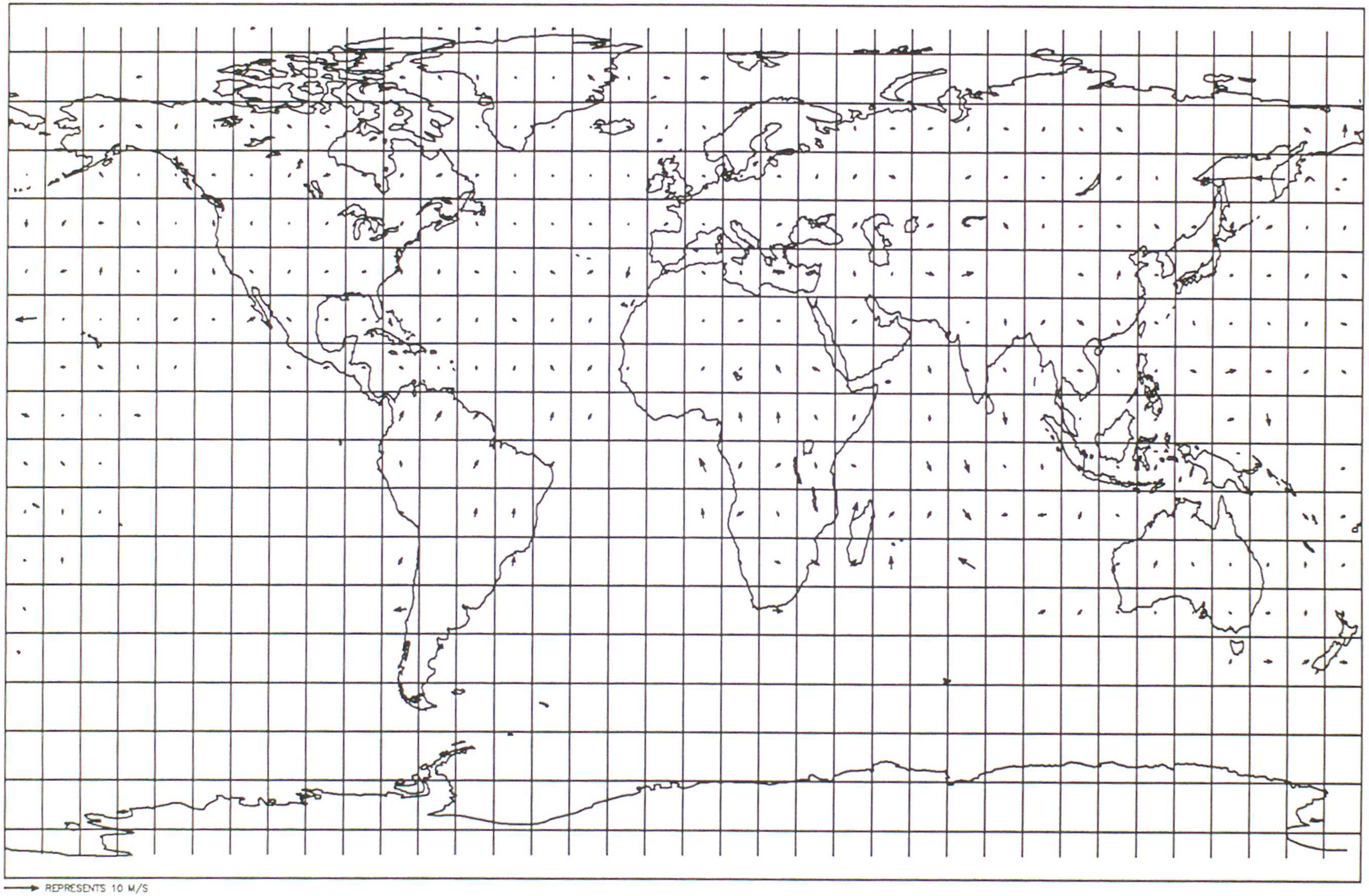
AIRCRAFT MEAN O–B WINDS BETWEEN 70 AND 500 HPA

FIGURE 5

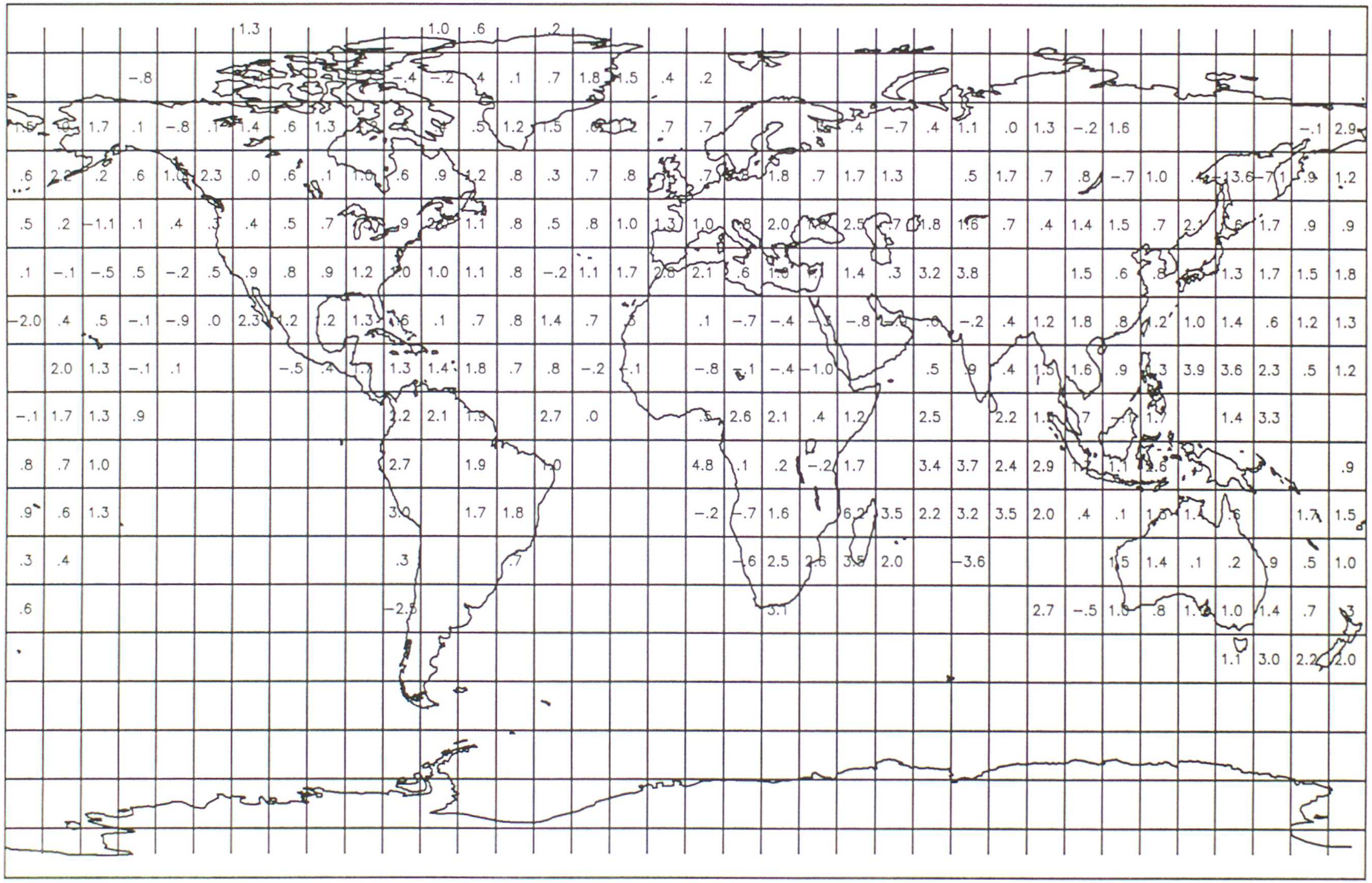
NOVEMBER 1997

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O–B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
NOVEMBER 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT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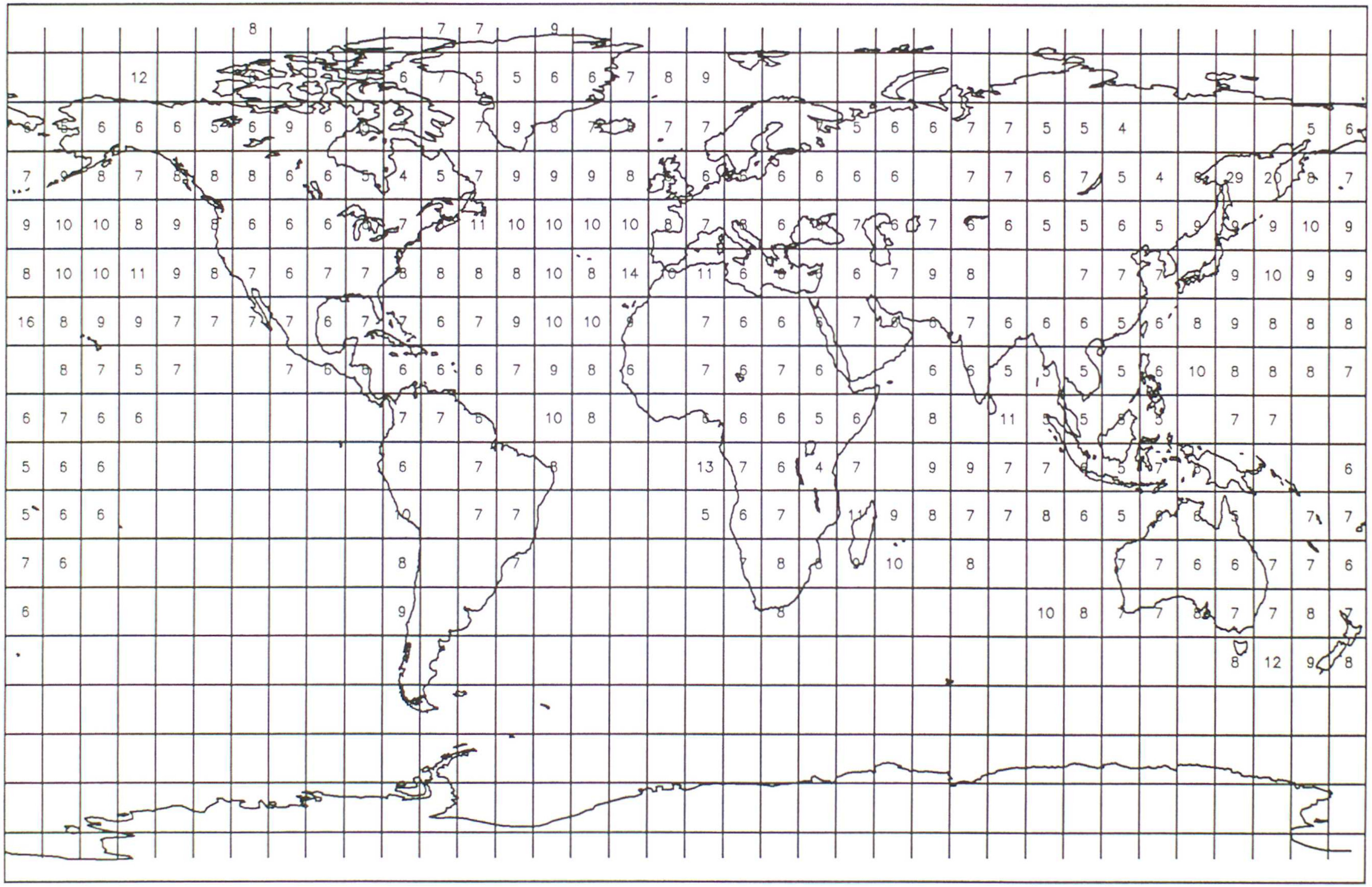
–.8 –.4 –.2 .4 .1 .7 1.8 1.5 .4 .2
1.5 1.7 .1 –.8 .1 1.4 .6 1.3 .5 1.2 1.5 .6 .2 .7 .7 .4 –.7 .4 1.1 .0 1.3 –.2 1.6 –.1 2.9
.6 2.2 .2 .6 1.0 2.3 .0 .6 .1 1.0 .6 .9 1.2 .8 .3 .7 .8 .7 1.8 .7 1.7 1.3 .5 1.7 .7 .8 –.7 1.0 13.6 –7 1 .9 1.2
.5 .2 –1.1 .1 .4 .4 .5 .7 .9 1.1 .8 .5 .8 1.0 1.3 1.0 .8 2.0 1.8 2.5 .7 1.8 1.6 .7 .4 1.4 1.5 .7 2.1 1.7 .9 .9
.1 –.1 –.5 .5 –.2 .5 .9 .8 .9 1.2 1.0 1.0 1.1 .8 –.2 1.1 1.7 2.8 2.1 .6 1.0 1.4 .3 3.2 3.8 1.5 .6 .8 1.3 1.7 1.5 1.8
–2.0 .4 .5 –.1 –.9 .0 2.3 1.2 1.2 1.3 .6 .1 .7 .8 1.4 .7 .1 –.7 –.4 –.8 –.2 .4 1.2 1.8 .8 1.2 1.0 1.4 .6 1.2 1.3
2.0 1.3 –.1 .1 –.5 .4 1.3 1.4 1.8 .7 .8 –.2 –.1 –.8 .1 –.4 –1.0 .5 .9 .4 1.5 1.6 .9 .3 3.9 3.6 2.3 .5 1.2
–.1 1.7 1.3 .9 .2 2.1 1.9 2.7 .0 .5 2.6 2.1 .4 1.2 2.5 2.2 1.5 .7 1.7 1.4 3.3
.8 .7 1.0 2.7 1.9 1.0 4.8 .1 .2 –.2 1.7 3.4 3.7 2.4 2.9 1.1 2.6 .9
.9 .6 1.3 3.0 1.7 1.8 –.2 –.7 1.6 6.2 3.5 2.2 3.2 3.5 2.0 .4 .1 1.0 1.4 .6 1.7 1.5
.3 .4 .3 .7 –.6 2.5 2.6 3.5 2.0 –3.6 1.5 1.4 .1 .2 .9 .5 1.0
.6 –2.5 3.1 2.7 –.5 1.0 .8 1.1 1.0 1.4 .7 .3
1.1 3.0 2.2 2.0

AIRCRAFT : RMS O–B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
NOVEMBER 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT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12 6 7 5 5 6 6 7 8 9
6 5 6 6 6 5 6 9 6 7 7 7 9 8 7 8 7 7 7 5 6 6 7 7 5 5 4 5 6
7 9 8 7 8 8 8 6 6 5 4 5 7 9 9 9 8 6 5 6 6 6 6 7 7 6 7 5 4 8 29 20 8 7
9 10 10 8 9 8 6 6 6 7 7 11 10 10 10 10 8 7 8 6 6 7 6 7 6 6 5 5 6 5 9 9 9 10 9
8 10 10 11 9 8 7 6 7 7 8 8 8 8 10 8 14 10 11 6 6 6 6 7 9 8 7 7 7 9 10 9 9
16 8 9 9 7 7 7 7 6 7 7 6 7 9 10 10 9 7 6 6 5 7 8 6 7 6 6 6 5 6 8 9 8 8 8
8 7 5 7 7 6 6 6 6 6 7 9 8 6 7 6 7 6 6 6 5 5 5 5 6 10 8 8 8 7
6 7 6 6 7 7 6 10 8 6 6 6 5 6 8 11 5 5 8 5 7 7
5 6 6 6 7 8 13 7 6 4 7 9 9 7 7 6 5 7 6
5 6 6 10 7 7 5 6 7 11 9 8 7 7 8 6 5 6 6 5 7 7
7 6 8 7 7 8 8 9 10 8 7 7 6 6 7 7 6
6 9 8 10 8 7 7 8 7 7 8 7
8 12 9 8

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
33658	00	Z	30	48/ 26	10	0	101.1	173.1	200.5	6
41977	00	Z	400	22/ 92	25	0	41.1	-39.0	56.7	4
42027	00	Z	250	34/ 75	19	0	83.3	-47.4	95.9	6
42101	00	Z	70	30/ 76	13	0	146.0	38.8	151.0	5
42314	00	Z	50	27/ 95	15	0	181.8	-61.1	191.8	10
42314	12	Z	200	27/ 95	16	0	100.3	-68.0	121.2	7
42361	12	Z	150	26/ 78	20	0	93.2	0.3	93.2	4
42369	00	Z	70	27/ 81	19	0	158.8	-60.9	170.0	8
42369	12	Z	100	27/ 81	19	1	147.6	43.9	154.0	9
42397	00	Z	250	27/ 88	22	0	64.7	-42.8	77.6	10
42397	12	Z	150	27/ 88	21	1	80.1	-88.4	119.3	9
42492	00	Z	200	26/ 85	27	0	76.7	-18.9	79.0	4
42492	12	Z	100	26/ 85	11	1	92.7	-106.5	141.3	5
42647	00	Z	50	23/ 73	16	0	118.2	-117.2	166.5	6
42724	12	Z	400	24/ 91	19	0	60.1	16.6	62.3	5
42867	00	Z	30	21/ 79	21	0	130.0	140.5	191.4	5
42971	00	Z	100	20/ 86	24	0	109.5	21.2	111.5	5
43003	12	Z	100	19/ 73	18	0	92.0	172.8	195.7	6
43128	00	Z	100	17/ 78	25	0	96.5	-82.2	126.7	7
43185	00	Z	50	16/ 81	20	0	121.0	100.9	157.5	5
43185	12	Z	70	16/ 81	19	0	107.3	151.4	185.6	8
43192	00	Z	50	15/ 74	17	1	130.4	-124.2	180.1	9
43192	12	Z	150	15/ 74	18	0	75.9	60.9	97.3	8
43285	12	Z	70	13/ 75	17	0	73.6	130.6	149.9	7
43295	12	Z	100	13/ 78	19	1	146.9	106.1	181.2	7
43346	00	Z	50	11/ 80	16	0	95.2	-148.4	176.3	6
43371	00	Z	50	8/ 77	13	0	110.1	-163.5	197.1	4
43371	12	Z	150	8/ 77	25	0	79.1	43.4	90.2	5
54497	00	Z	70	40/ 124	24	1	57.1	105.2	119.6	4
54497	12	Z	150	40/ 124	27	0	45.3	104.7	114.1	8
61902	12	Z	100	-8/ -14	14	0	52.0	121.2	131.9	5
62306	12	Z	150	31/ 27	15	0	75.4	136.8	156.2	6
76458	00	Z	70	23/-106	13	0	40.2	138.5	144.2	5
83612	12	Z	30	-20/ -55	12	0	56.1	195.6	203.5	5
89009	00	Z	400	-90/ 0	20	0	67.4	64.8	93.6	10
89009	12	Z	700	-90/ 0	2	0	30.0	53.0	60.9	7
89022	12	Z	200	-75/ -27	8	13	78.5	-138.2	159.0	9
89512	12	Z	70	-71/ 12	11	0	41.9	140.1	146.2	5
89542	12	Z	400	-68/ 46	13	0	58.9	36.8	69.5	10
89564	12	Z	400	-68/ 63	21	1	60.1	14.5	61.8	4
89664	00	Z	250	-78/ 167	21	0	70.0	84.8	110.0	8
89664	12	Z	250	-78/ 167	19	0	48.2	53.0	71.6	4
96237	00	Z	200	-2/ 106	15	0	87.2	-77.5	116.6	7

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – NOVEMBER 1997 FIGURE 8
ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1362

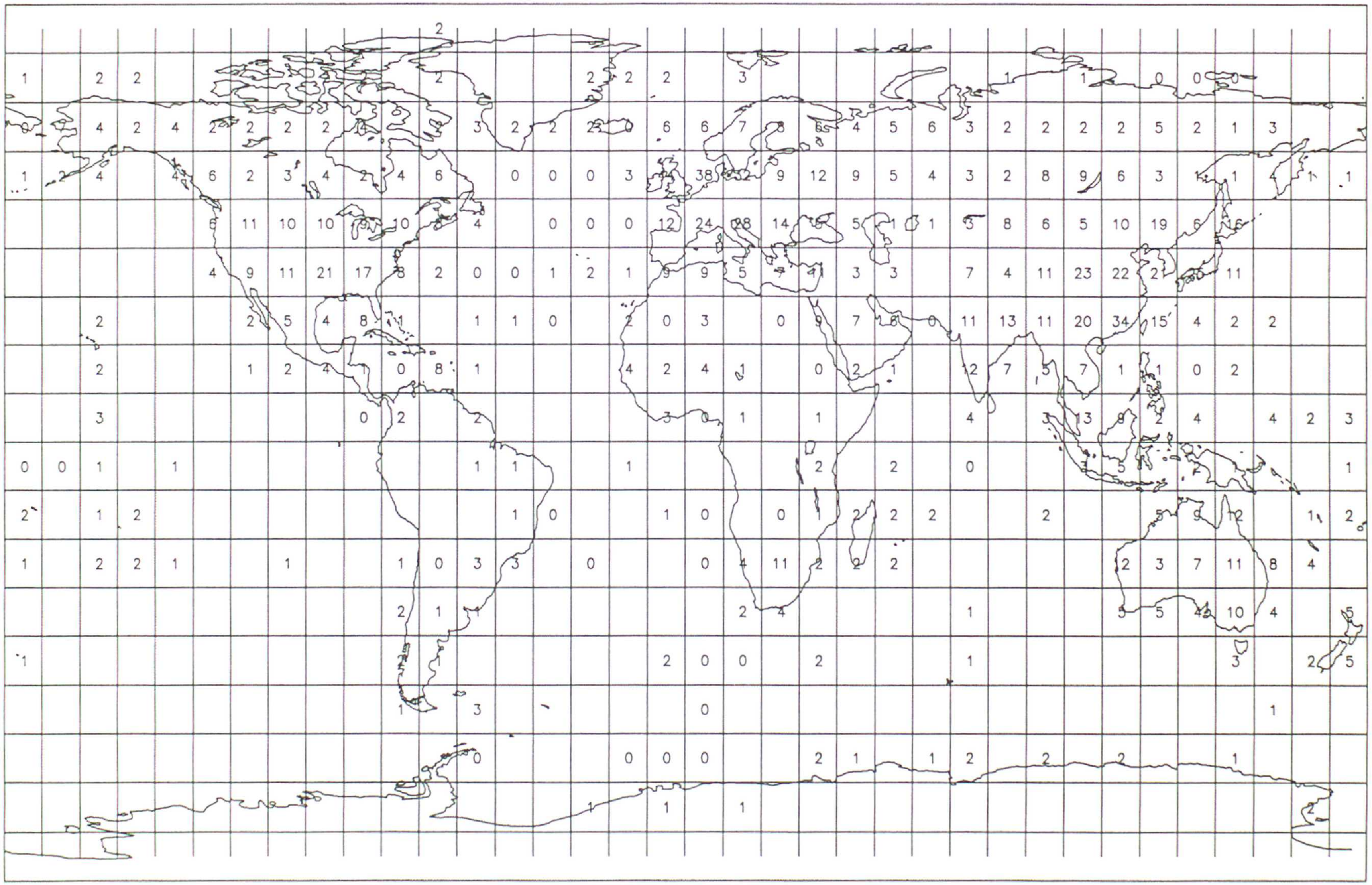


TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
42397	00	V	200	27/ 88	23	0	0	-9.8	-2.2	15.9	1
42410	00	V	150	26/ 92	14	0	14	5.7	3.3	20.1	1
43014	00	V	250	20/ 75	15	0	13	12.7	6.1	20.5	1
43014	12	V	250	20/ 75	12	0	8	12.9	4.4	18.1	1

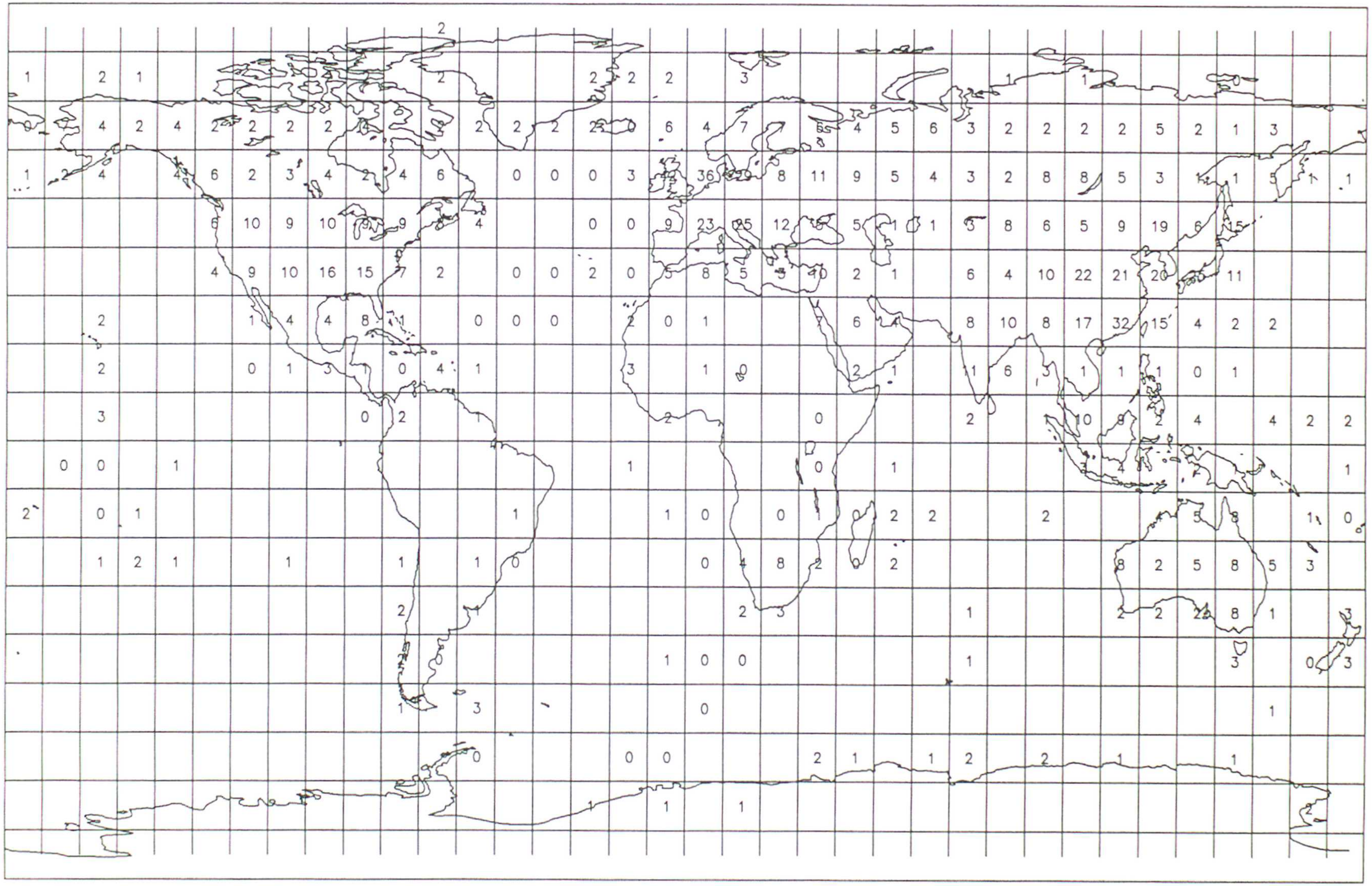
AVAILABILITY – TEMP/PILOT – 300 HPA WIND – NOVEMBER 1997

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1167

FIGURE 9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0 4 2 4 2 2 2 2 2 2 2 2 2 6 4 7 5 4 5 6 3 2 2 2 2 5 2 1 3
1 2 4 4 6 2 3 4 2 4 6 0 0 0 3 36 8 11 9 5 4 3 2 8 8 5 3 1 1 5 1 1
6 10 9 10 9 9 4 0 0 9 23 25 12 5 5 1 1 3 8 6 5 9 19 6 15
4 9 10 16 15 7 2 0 0 2 0 5 8 5 3 10 2 1 6 4 10 22 21 20 11
2 1 4 4 8 1 0 0 0 2 0 1 7 6 4 8 10 8 17 32 15 4 2 2
2 0 1 3 0 4 1 3 1 0 2 1 11 6 3 1 1 1 0 1
3 0 2 1 2 0 2 10 8 2 4 4 2 2
0 0 1 1 0 1 3 4 1
2 0 1 1 1 0 0 1 0 2 2 2 5 8 1 0
1 2 1 1 1 1 0 0 4 8 2 0 2 8 2 5 8 5 3
2 1 2 3 1 2 2 22 8 1 3
1 0 0 1 3 0 3
1 3 0 1
0 0 0 2 1 1 2 2 1 1
1 1 1 2

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for radiosonde TEMPs.
Area monitored	:90°N - 90°S, 180°W - 180°E.
Standard of comparison	:Background field from Bracknell global model.
Observation times	:00 UTC and 12 UTC.
Level(s) monitored	:Standard levels between 500.0 - 150.0 hPa
Element monitored	:WIND DIRECTION in degrees

Parameters monitored

:NUM OBS	:Average number of observations at all levels.
:BIAS	:Mean difference of observations from background values from all levels.
:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS $\geq$ 5, and
ABSOLUTE BIAS $\geq$ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
17280	12	DD	38/ 40	24	-11.4	8.2	15.4
42339	00	DD	26/ 73	28	14.7	4.7	7.4
42339	12	DD	26/ 73	22	15.0	6.1	10.6
42369	00	DD	27/ 81	21	10.6	6.2	11.1
42369	12	DD	27/ 81	23	10.7	2.6	9.6
72248	00	DD	32/ -94	22	-10.2	1.3	10.8
72248	12	DD	32/ -94	23	-14.7	7.7	16.0
91217	12	DD	14/ 145	14	-13.9	9.8	21.3
91348	00	DD	7/ 158	14	10.1	8.5	26.0
91348	12	DD	7/ 158	15	10.5	9.8	26.9

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: November, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES, METEOSAT, GMS, INSAT.

Standard of comparison :Background field from Bracknell global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

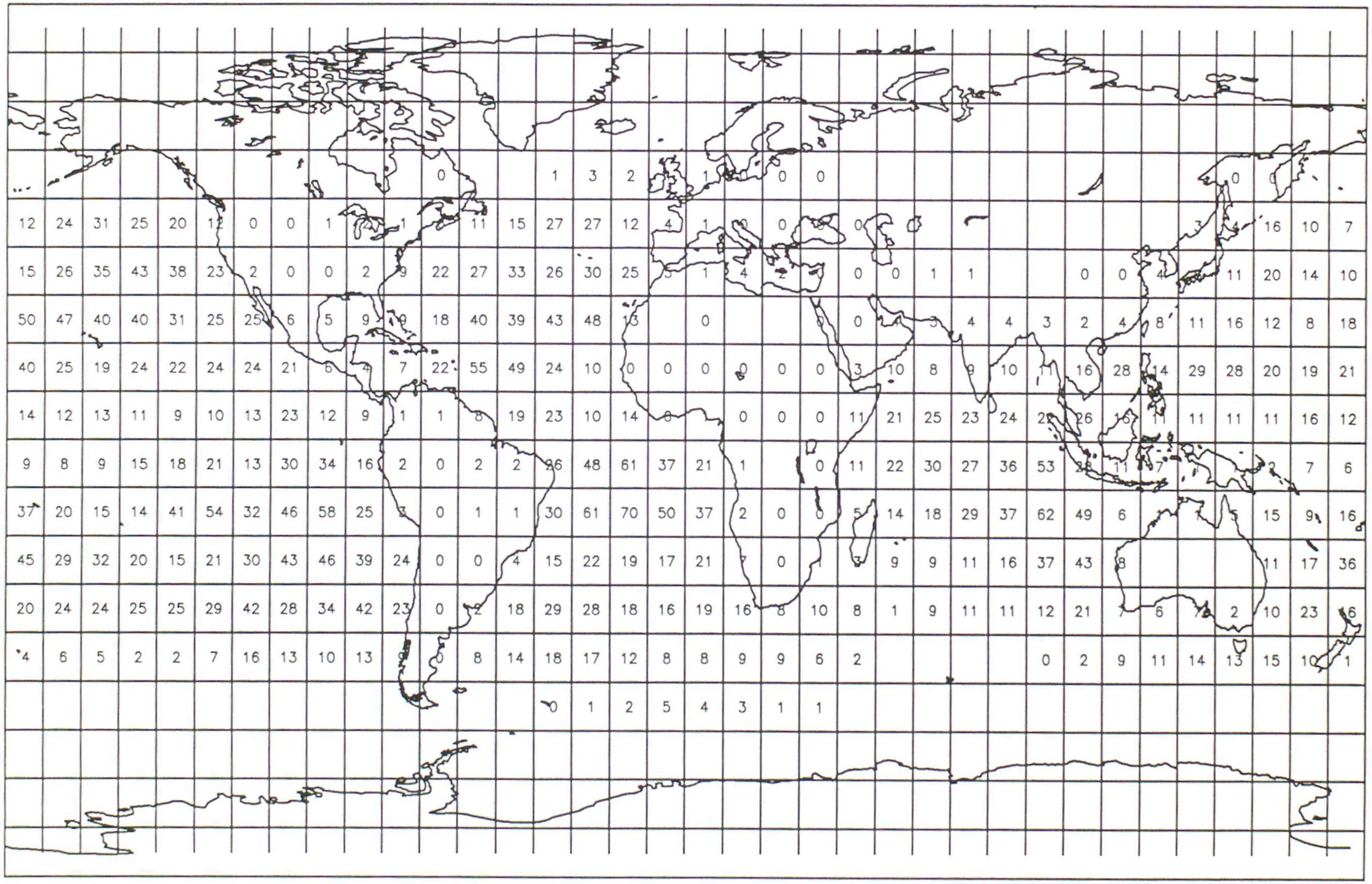
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
NOVEMBER 1997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15 26 35 43 38 23 2 0 0 2 9 22 27 33 26 30 25 5 1 4 2 0 0 0 1 1 0 0 4 11 20 14 10
50 47 40 40 31 25 25 6 5 9 9 18 40 39 43 48 13 0 0 0 4 3 4 4 3 2 4 8 11 16 12 8 18
40 25 19 24 22 24 24 21 6 4 7 22 55 49 24 10 0 0 0 0 0 0 3 10 8 9 10 11 16 28 14 29 28 20 19 21
14 12 13 11 9 10 13 23 12 9 1 1 8 19 23 10 14 8 0 0 0 11 21 25 23 24 22 26 16 11 11 11 11 16 12
9 8 9 15 18 21 13 30 34 16 2 0 2 2 26 48 61 37 21 1 0 11 22 30 27 36 53 28 11 7 1 2 7 6
37 20 15 14 41 54 32 46 58 25 3 0 1 1 30 61 70 50 37 2 0 0 5 14 18 29 37 62 49 6 1 1 5 15 9 16
45 29 32 20 15 21 30 43 46 39 24 0 0 4 15 22 19 17 21 7 0 1 3 9 9 11 16 37 43 8 11 17 36
20 24 24 25 25 29 42 28 34 42 23 0 2 18 29 28 18 16 19 16 8 10 8 1 9 11 11 12 21 7 6 7 2 10 23 16
4 6 5 2 2 7 16 13 10 13 9 0 8 14 18 17 12 8 8 9 9 6 2 0 2 9 11 14 13 15 10 1
0 1 2 5 4 3 1 1

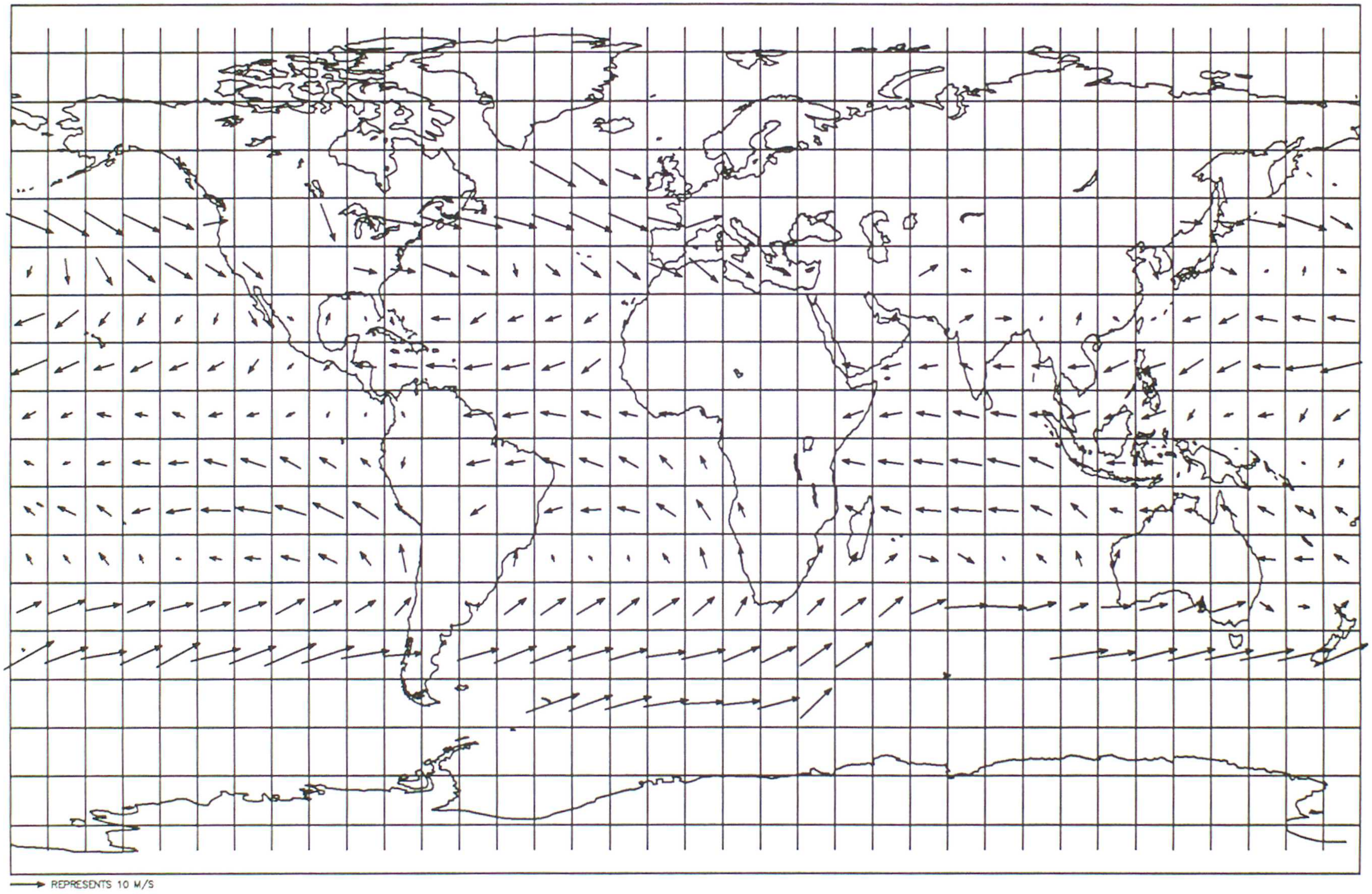
SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA

NOVEMBER 1997

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

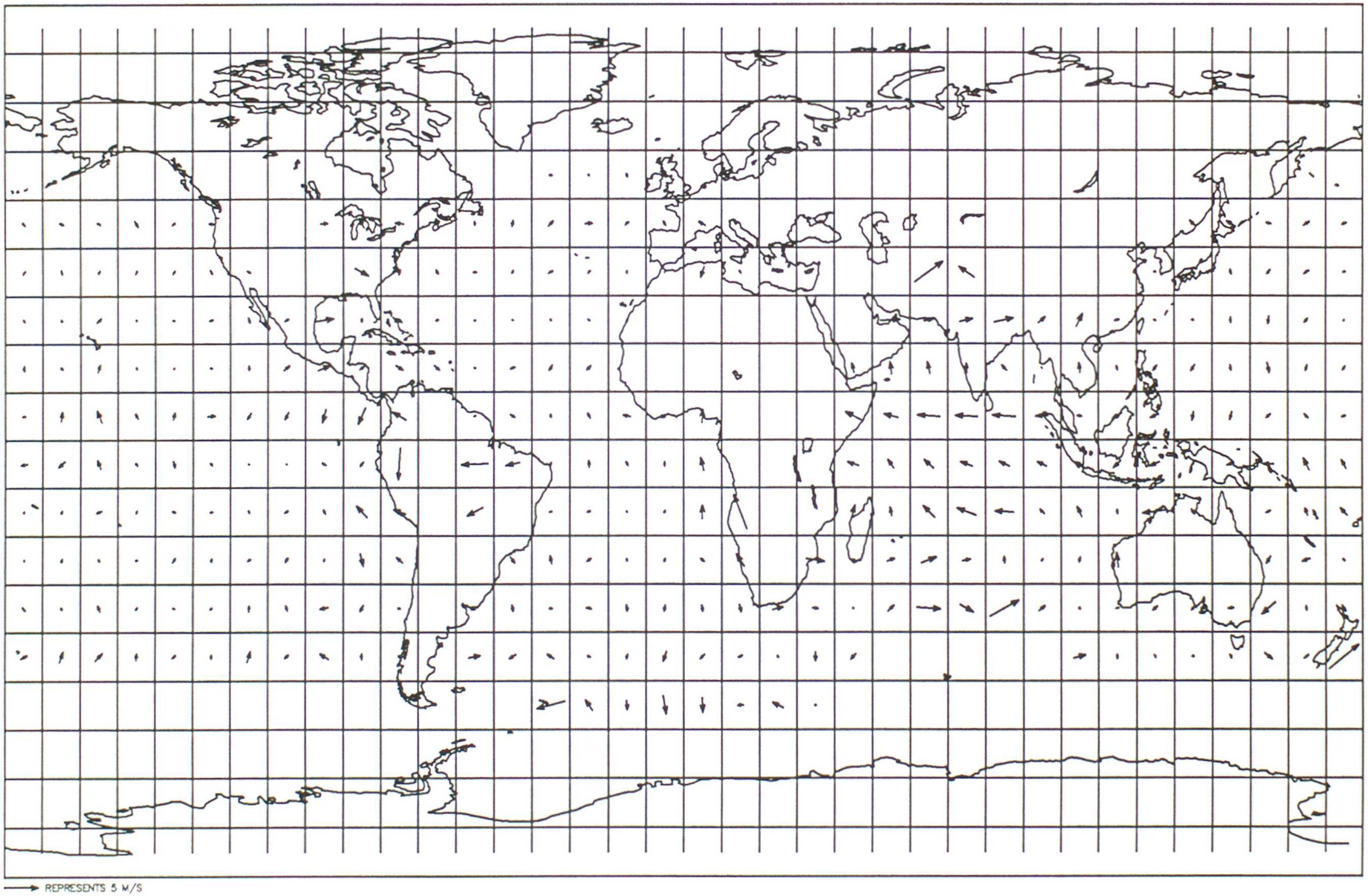
FIGURE 11


→ REPRESENTS 10 M/S

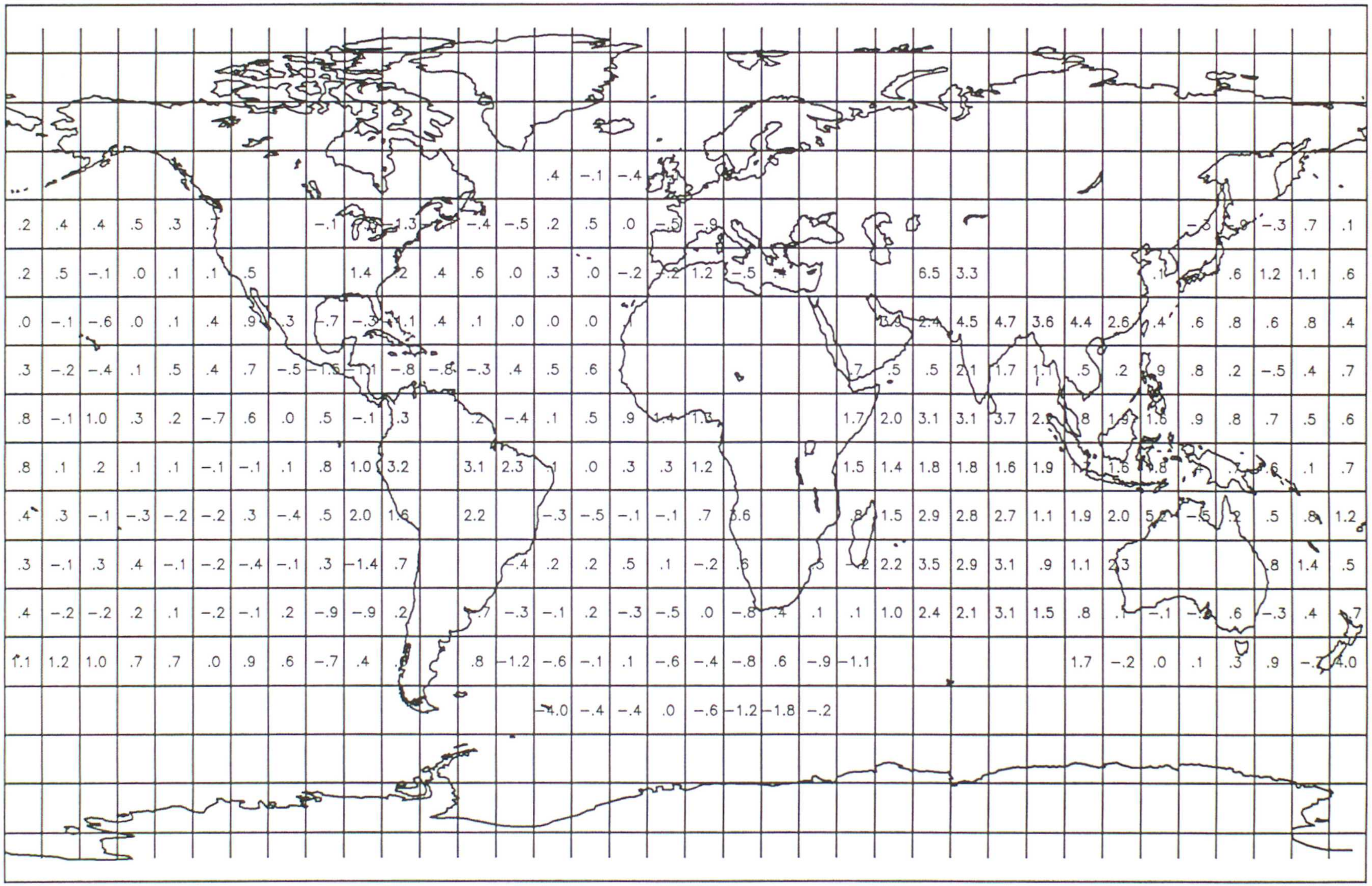
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701-1000 HPA

FIGURE 12

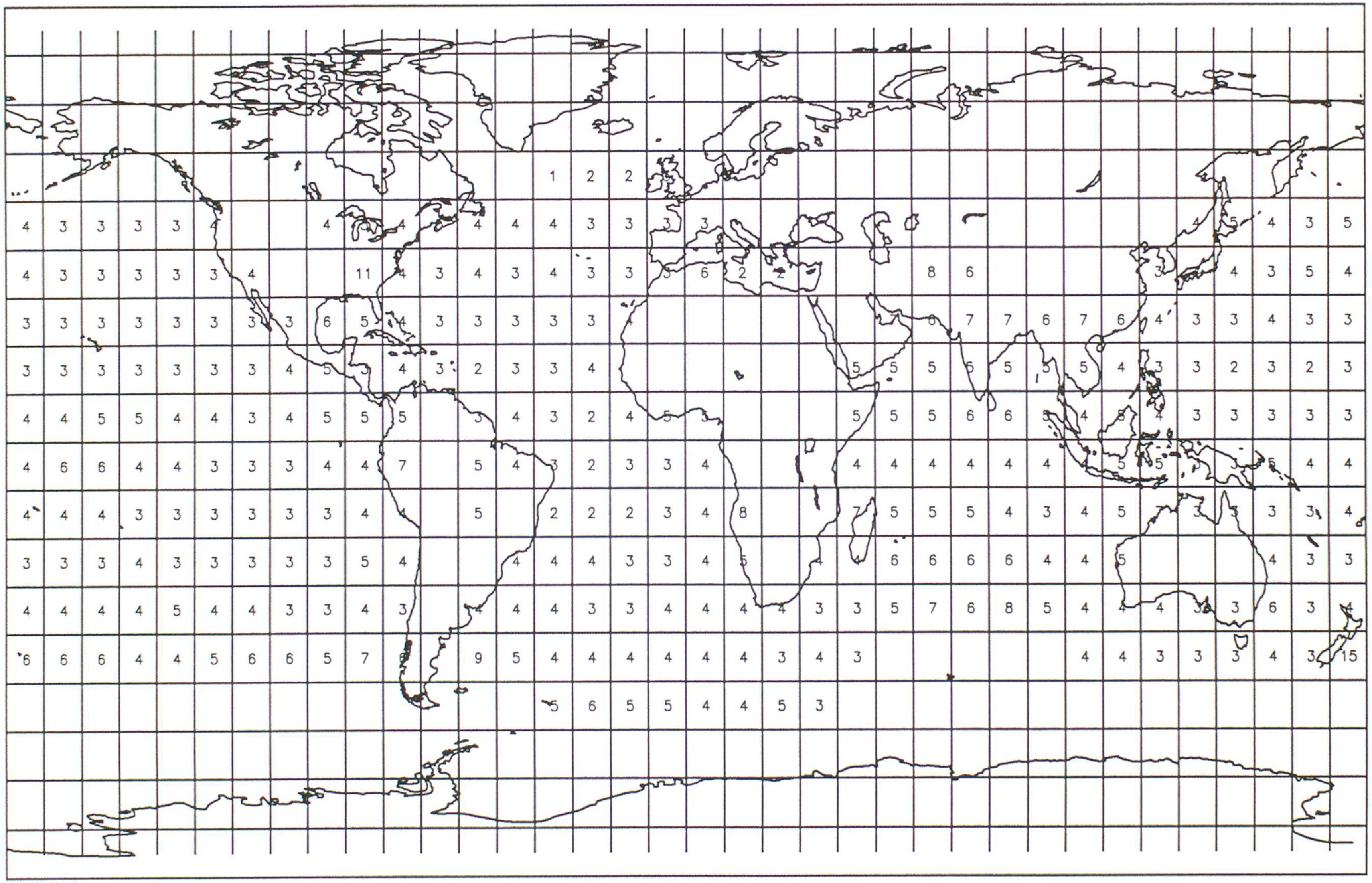
NOVEMBER 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



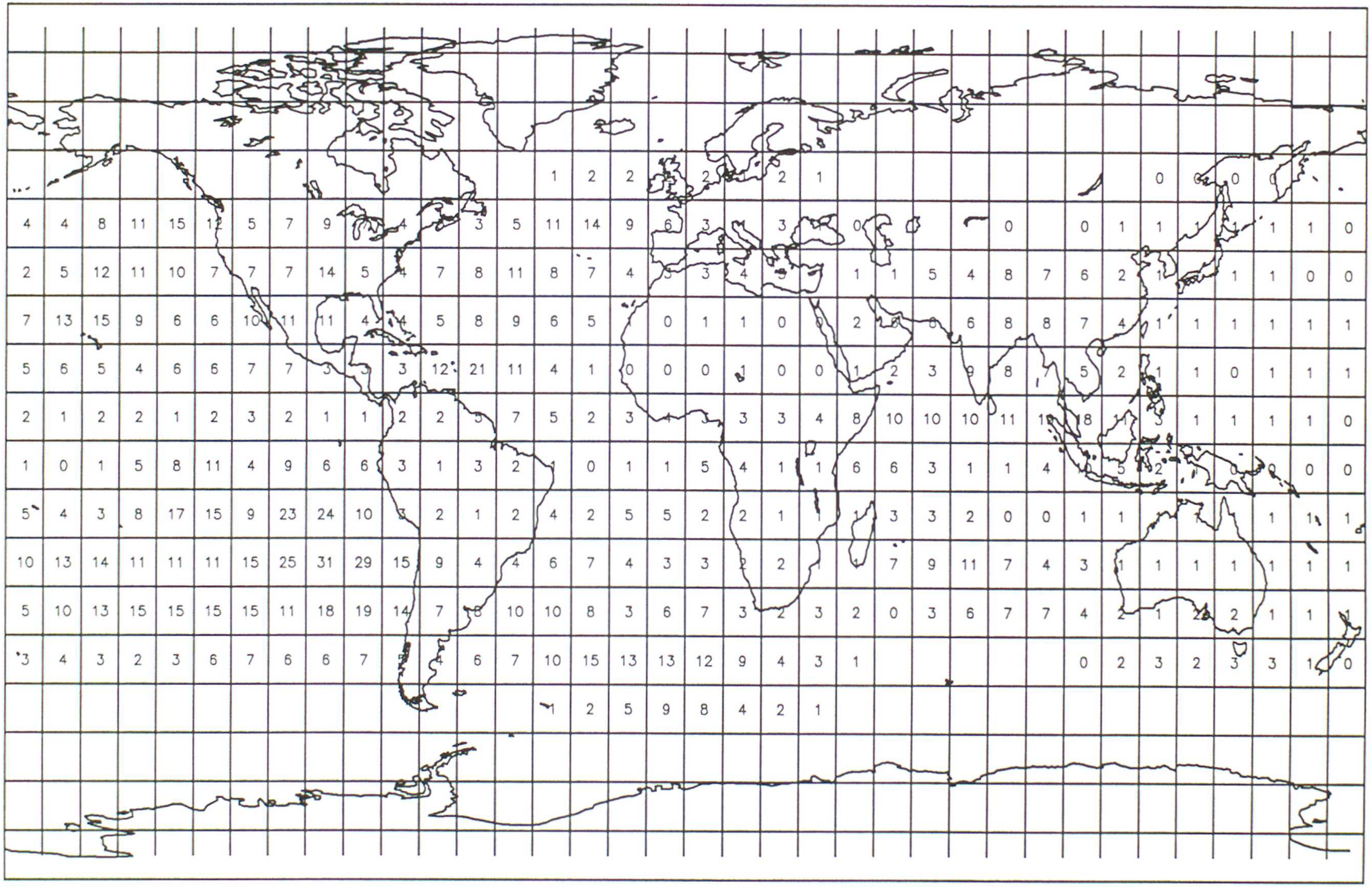
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
NOVEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


.4 –.1 –.4
.2 .4 .4 .5 .3 –.1 –1.3 –.4 –.5 .2 .5 .0 –.5 –.9 –.3 .7 .1
.2 .5 –.1 .0 .1 .1 .5 1.4 .2 .4 .6 .0 .3 .0 –.2 –.2 1.2 –.5 6.5 3.3 .1 .6 1.2 1.1 .6
.0 –.1 –.6 .0 .1 .4 .9 .3 –.7 –.3 1.1 .4 .1 .0 .0 .0 2.4 4.5 4.7 3.6 4.4 2.6 .4 .6 .8 .6 .8 .4
.3 –.2 –.4 .1 .5 .4 .7 –.5 –.8 –.8 –.3 .4 .5 .6 .7 .5 .5 2.1 1.7 1.1 .5 .2 .9 .8 .2 –.5 .4 .7
.8 –.1 1.0 .3 .2 –.7 .6 .0 .5 –.1 1.3 .2 –.4 .1 .5 .9 1.7 2.0 3.1 3.1 3.7 .8 .9 .8 .7 .5 .6
.8 .1 .2 .1 .1 –.1 –.1 .1 .8 1.0 3.2 3.1 2.3 .0 .3 .3 1.2 1.5 1.4 1.8 1.8 1.6 1.9 1.6 .6 .1 .7
.4 .3 –.1 –.3 –.2 –.2 .3 –.4 .5 2.0 1.6 2.2 –.3 –.5 –.1 –.1 .7 3.6 .8 1.5 2.9 2.8 2.7 1.1 1.9 2.0 5.2 –.5 .2 .5 .8 1.2
.3 –.1 .3 .4 –.1 –.2 –.4 –.1 .3 –1.4 .7 –.4 .2 .2 .5 .1 –.2 .6 2.2 3.5 2.9 3.1 .9 1.1 2.3 .8 1.4 .5
.4 –.2 –.2 .2 .1 –.2 –.1 .2 –.9 –.9 .2 .7 –.3 –.1 .2 –.3 –.5 .0 –.8 .4 .1 .1 1.0 2.4 2.1 3.1 1.5 .8 –.1 .6 –.3 .4 .7
1.1 1.2 1.0 .7 .7 .0 .9 .6 –.7 .4 .8 –1.2 –.6 –.1 .1 –.6 –.4 –.8 .6 –.9 –1.1 1.7 –.2 .0 .1 .3 .9 4.0
–4.0 –.4 –.4 .0 –.6 –1.2 –1.8 –.2

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
NOVEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



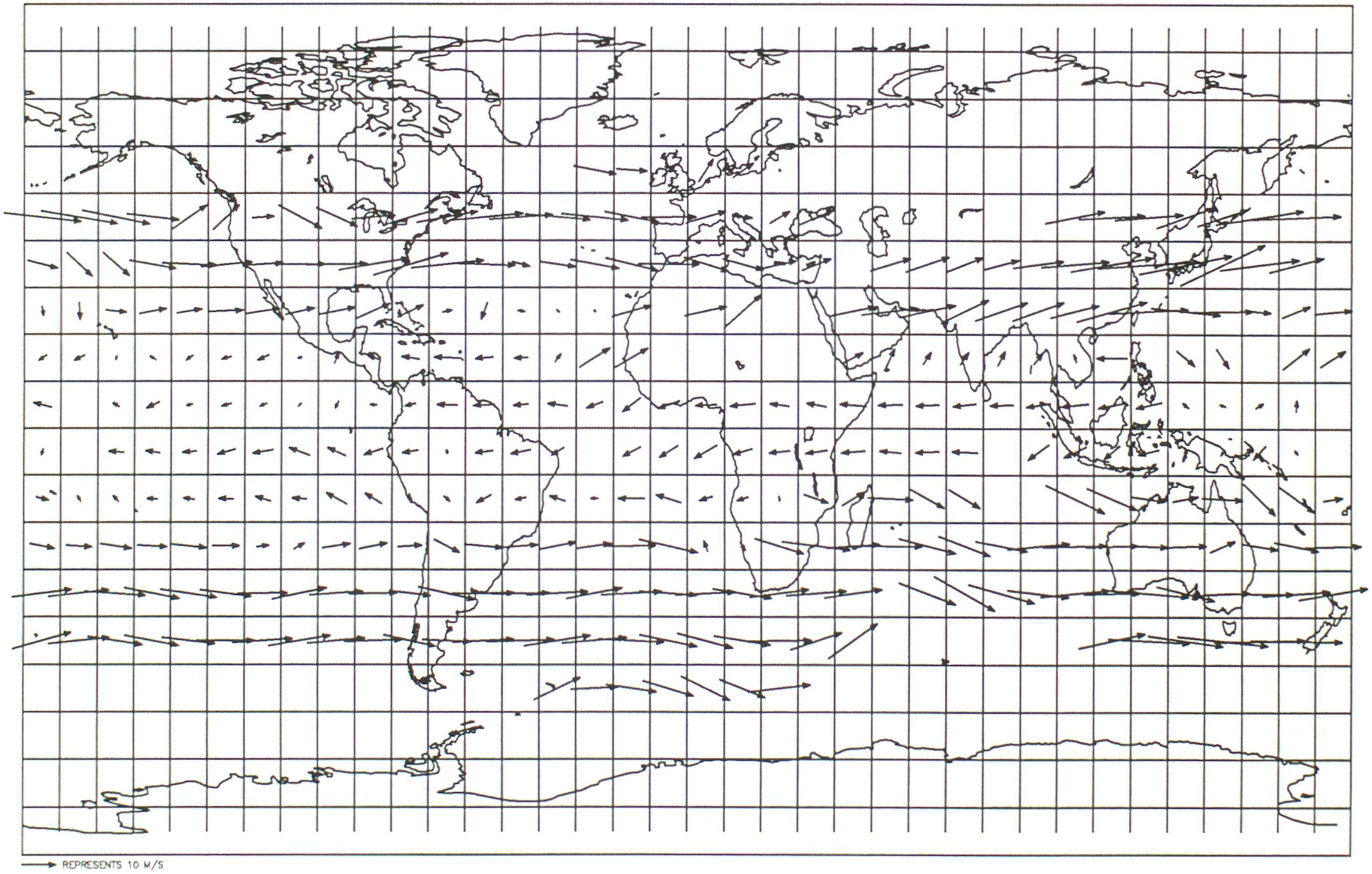
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
NOVEMBER 1997



														1	2	2	[illegible]	2	1	2	1									0	0	0	0		
4	4	8	11	15	12	5	7	9	[illegible]	4		3	5	11	14	9	6	3	4	3	1	0				0		0	1	1	1	1	1	1	0
2	5	12	11	10	7	7	7	14	5	4	7	8	11	8	7	4	3	3	4	5		1	1	5	4	8	7	6	2	1		1	1	0	0
7	13	15	9	6	6	10	11	11	4	4	5	8	9	6	5	1	0	1	1	0	0	2	6	6	6	8	8	7	4	1	1	1	1	1	1
5	6	5	4	6	6	7	7	3	3	3	12	21	11	4	1	0	0	0	1	0	0	1	2	3	9	8	7	5	2	1	1	0	1	1	1
2	1	2	2	1	2	3	2	1	1	2	2	5	7	5	2	3	4	3	3	3	4	8	10	10	10	11	[illegible]	18	11	3	1	1	1	1	0
1	0	1	5	8	11	4	9	6	6	3	1	3	2	1	0	1	1	5	4	1	1	6	6	3	1	1	4	10	5	2	1	0	0	0	0
5	4	3	8	17	15	9	23	24	10	3	2	1	2	4	2	5	5	2	2	1	1	1	3	3	2	0	0	1	1	1	1		1	1	1
10	13	14	11	11	11	15	25	31	29	15	9	4	4	6	7	4	3	3	2	2	1	1	7	9	11	7	4	3	1	1	1	1	1	1	1
5	10	13	15	15	15	15	11	18	19	14	7	8	10	10	8	3	6	7	3	2	3	2	0	3	6	7	7	4	2	1	2	2	1	1	1
3	4	3	2	3	6	7	6	6	7	5	4	6	7	10	15	13	13	12	9	4	3	1						0	2	3	2	3	3	1	0
														1	2	5	9	8	4	2	1														

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
NOVEMBER 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16


REPRESENTS 10 M/S

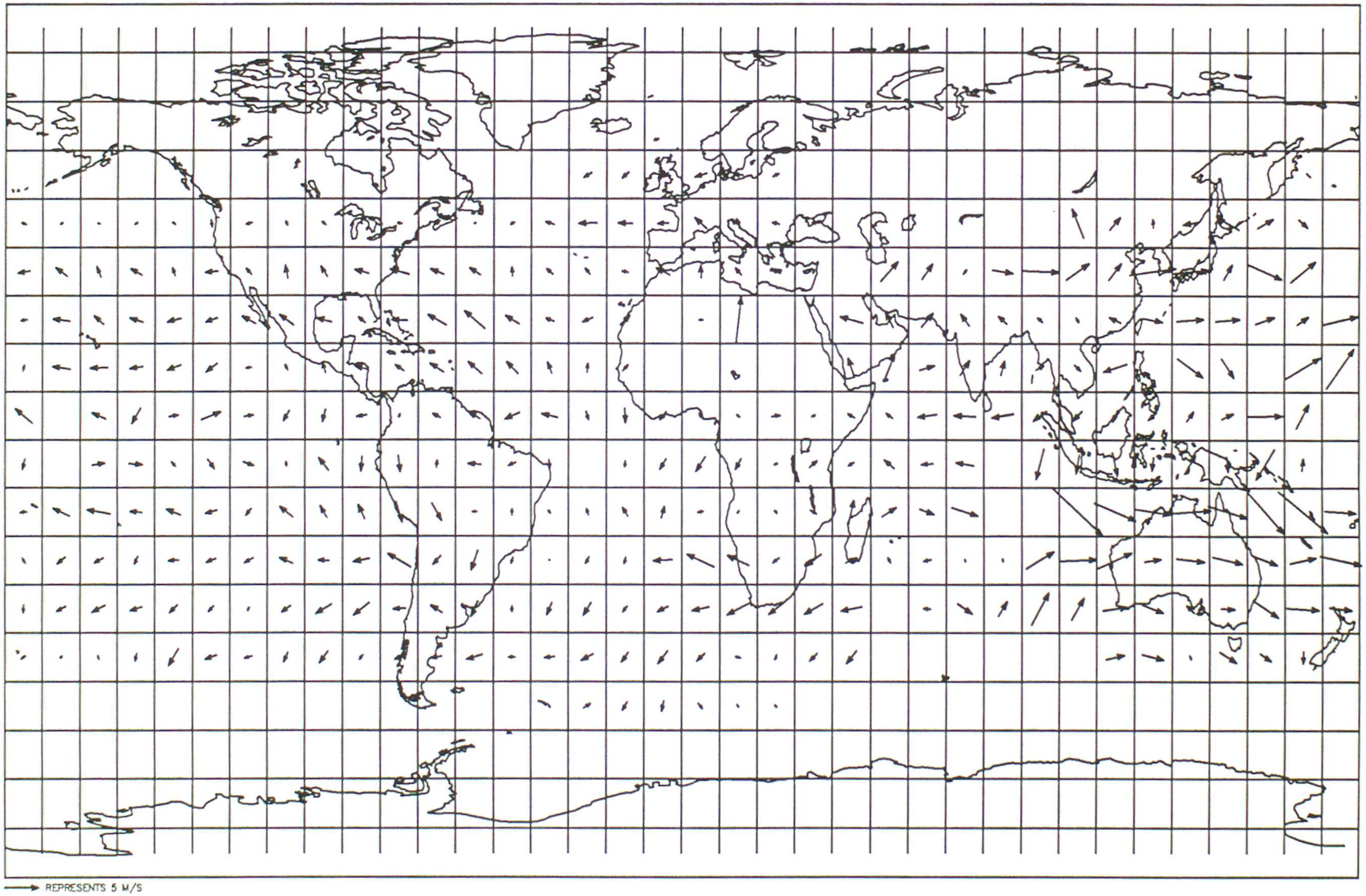
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 401–700 HPA

NOVEMBER 1997

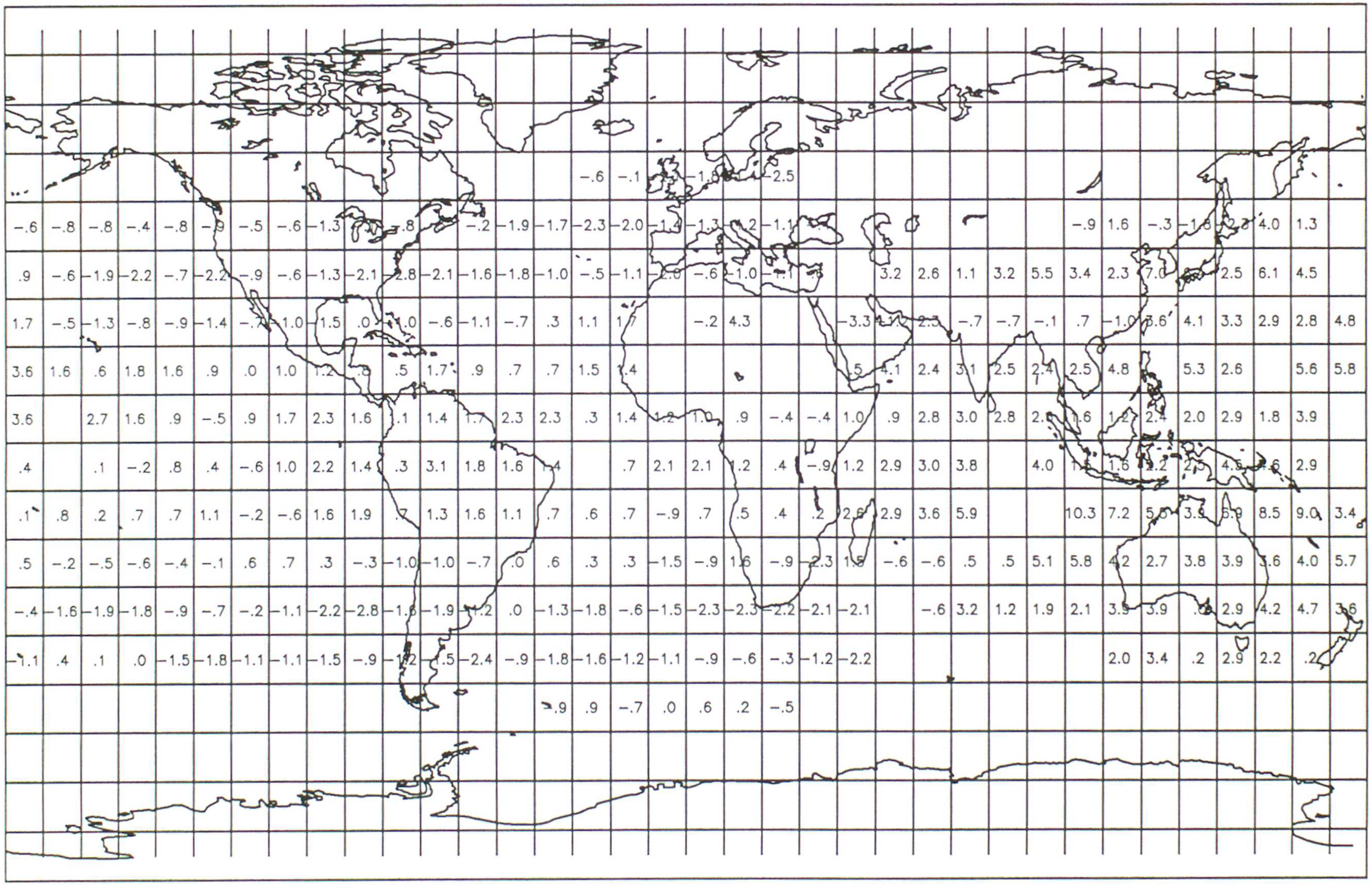
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

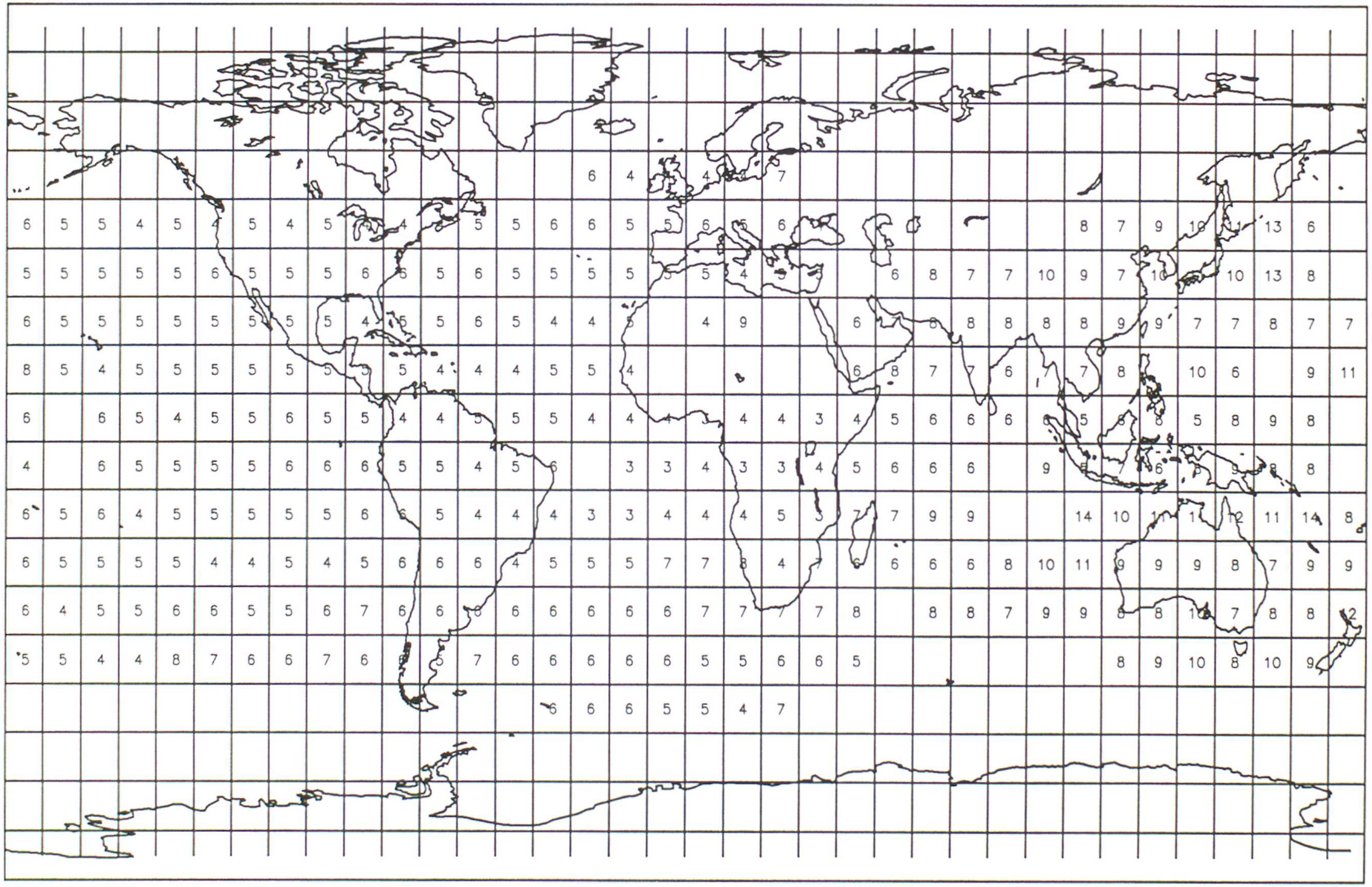
FIGURE 17



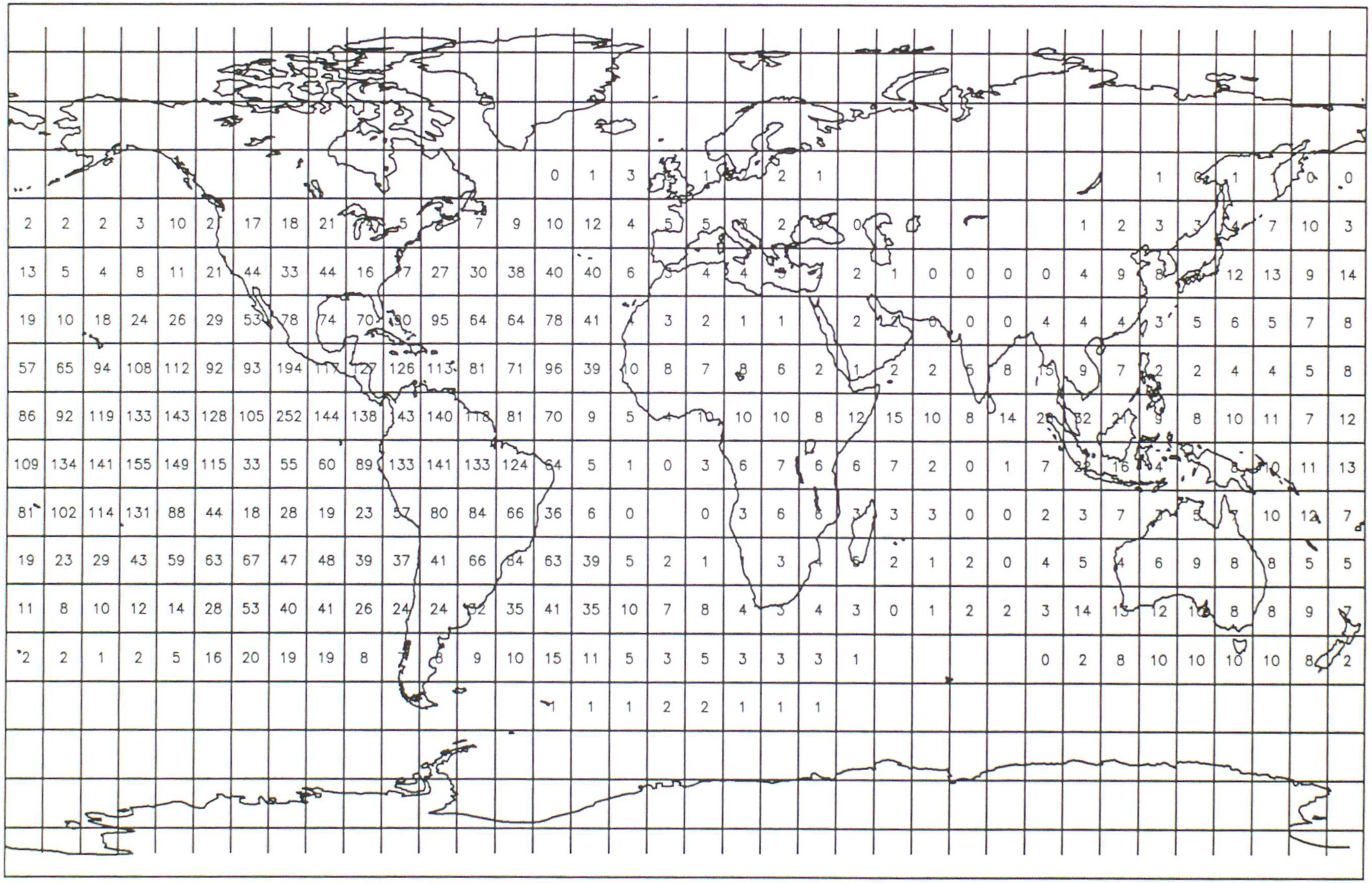
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
NOVEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.6 -.1 -1.8 -2.5
-.6 -.8 -.8 -.4 -.8 -.9 -.5 -.6 -1.3 -.8 -.2 -1.9 -1.7 -2.3 -2.0 -1.4 -1.3 -.2 -1.1 -.9 1.6 -.3 -1.8 4.0 1.3
.9 -.6 -1.9 -2.2 -.7 -2.2 -.9 -.6 -1.3 -2.1 -2.8 -2.1 -1.6 -1.8 -1.0 -.5 -1.1 -2.0 -.6 -1.0 -1.1 3.2 2.6 1.1 3.2 5.5 3.4 2.3 7.0 2.5 6.1 4.5
1.7 -.5 -1.3 -.8 -.9 -1.4 -.7 -1.0 -1.5 .0 -1.0 -.6 -1.1 -.7 .3 1.1 1.7 -.2 4.3 -3.3 2.3 -.7 -.7 -.1 .7 -1.0 3.6 4.1 3.3 2.9 2.8 4.8
3.6 1.6 .6 1.8 1.6 .9 .0 1.0 1.2 .5 1.7 .9 .7 .7 1.5 1.4 .5 4.1 2.4 3.1 2.5 2.4 2.5 4.8 5.3 2.6 5.6 5.8
3.6 2.7 1.6 .9 -.5 .9 1.7 2.3 1.6 .1 1.4 1.7 2.3 2.3 .3 1.4 1.2 1.0 .9 -.4 -.4 1.0 .9 2.8 3.0 2.8 1.6 1.2 2.4 2.0 2.9 1.8 3.9
.4 .1 -.2 .8 .4 -.6 1.0 2.2 1.4 .3 3.1 1.8 1.6 1.4 .7 2.1 2.1 1.2 .4 -.9 1.2 2.9 3.0 3.8 4.0 1.5 1.6 2.2 2.5 4.5 2.9
.1 .8 .2 .7 .7 1.1 -.2 -.6 1.6 1.9 .7 1.3 1.6 1.1 .7 .6 .7 -.9 .7 .5 .4 .2 2.6 2.9 3.6 5.9 10.3 7.2 5.5 3.5 6.9 8.5 9.0 3.4
.5 -.2 -.5 -.6 -.4 -.1 .6 .7 .3 -.3 -1.0 -1.0 -.7 .0 .6 .3 .3 -1.5 -.9 1.6 -.9 -2.3 1.5 -.6 -.6 .5 .5 5.1 5.8 4.2 2.7 3.8 3.9 3.6 4.0 5.7
-.4 -1.6 -1.9 -1.8 -.9 -.7 -.2 -1.1 -2.2 -2.8 -1.6 -1.9 -1.2 .0 -1.3 -1.8 -.6 -1.5 -2.3 -2.3 -2.2 -2.1 -2.1 -.6 3.2 1.2 1.9 2.1 3.9 3.9 2.9 4.2 4.7 3.6
-1.1 .4 .1 .0 -1.5 -1.8 -1.1 -1.1 -1.5 -.9 -1.2 -.5 -2.4 -.9 -1.8 -1.6 -1.2 -1.1 -.9 -.6 -.3 -1.2 -2.2 2.0 3.4 .2 2.9 2.2 .2
.9 .9 -.7 .0 .6 .2 -.5

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
NOVEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
NOVEMBER 1997


0 1 3 1 2 1 1 0 1 0 0
2 2 2 3 10 2 17 18 21 5 7 9 10 12 4 5 5 3 2 0 1 2 3 3 4 7 10 3
13 5 4 8 11 21 44 33 44 16 17 27 30 38 40 40 6 3 4 4 2 1 0 0 0 0 4 9 8 12 13 9 14
19 10 18 24 26 29 53 78 74 70 90 95 64 64 78 41 4 3 2 1 1 2 2 0 0 0 4 4 4 3 5 6 5 7 8
57 65 94 108 112 92 93 194 117 127 126 113 81 71 96 39 10 8 7 8 6 2 1 2 2 5 8 15 9 7 2 2 4 4 5 8
86 92 119 133 143 128 105 252 144 138 143 140 118 81 70 9 5 4 10 10 10 8 12 15 10 8 14 28 32 21 9 8 10 11 7 12
109 134 141 155 149 115 33 55 60 89 133 141 133 124 64 5 1 0 3 6 7 6 6 7 2 0 1 7 22 16 4 7 8 10 11 13
81 102 114 131 88 44 18 28 19 23 57 80 84 66 36 6 0 0 3 6 8 3 3 3 0 0 2 3 7 7 5 7 10 12 7
19 23 29 43 59 63 67 47 48 39 37 41 66 84 63 39 5 2 1 3 4 5 2 1 2 0 4 5 4 6 9 8 8 5 5
11 8 10 12 14 28 53 40 41 26 24 24 32 35 41 35 10 7 8 4 3 4 3 0 1 2 2 3 14 13 12 10 8 8 9 7
2 2 1 2 5 16 20 19 19 8 7 8 9 10 15 11 5 3 5 3 3 3 1 0 2 8 10 10 10 10 8 2
1 1 1 2 2 1 1 1

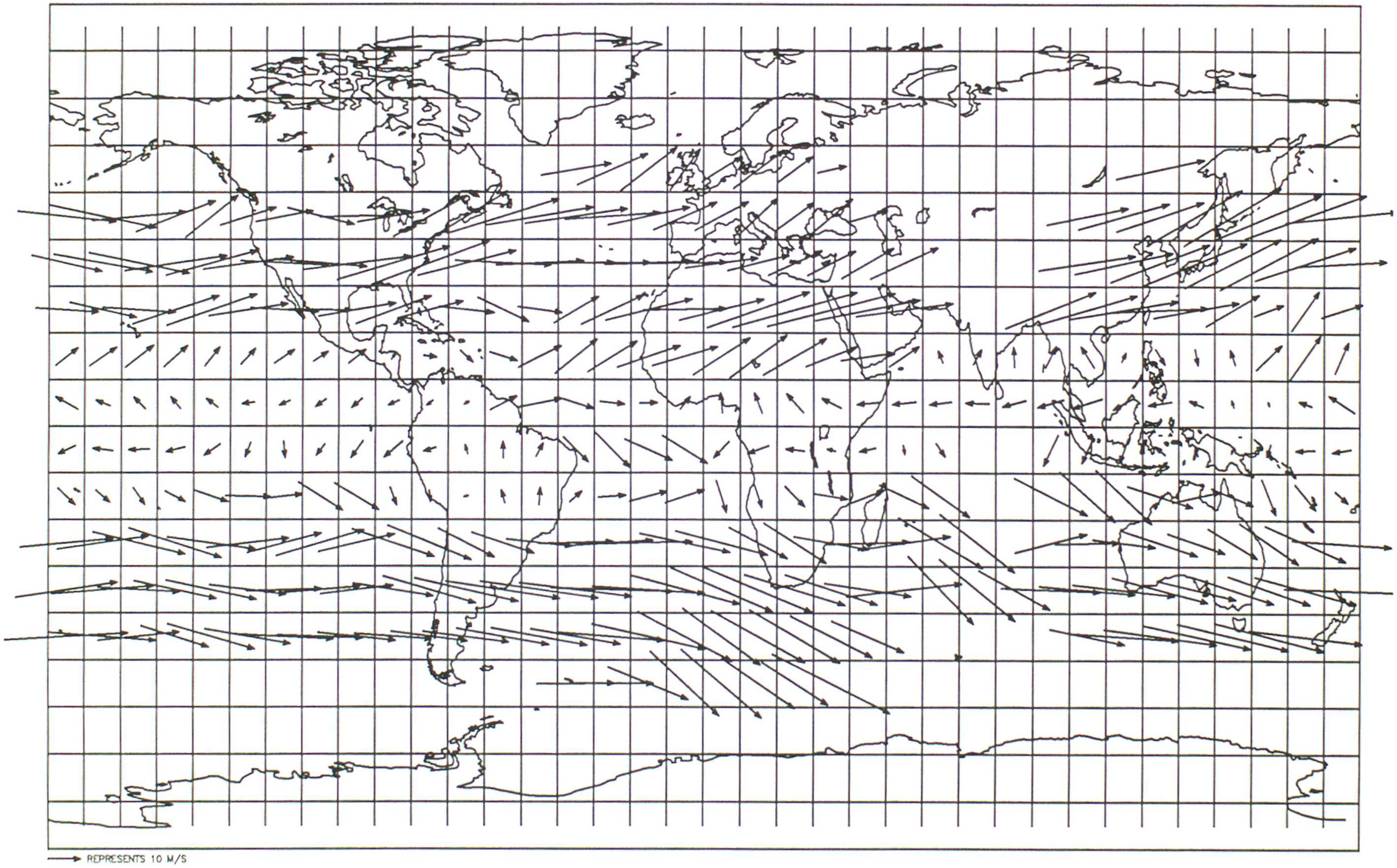
SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA

FIGURE 21

NOVEMBER 1997

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

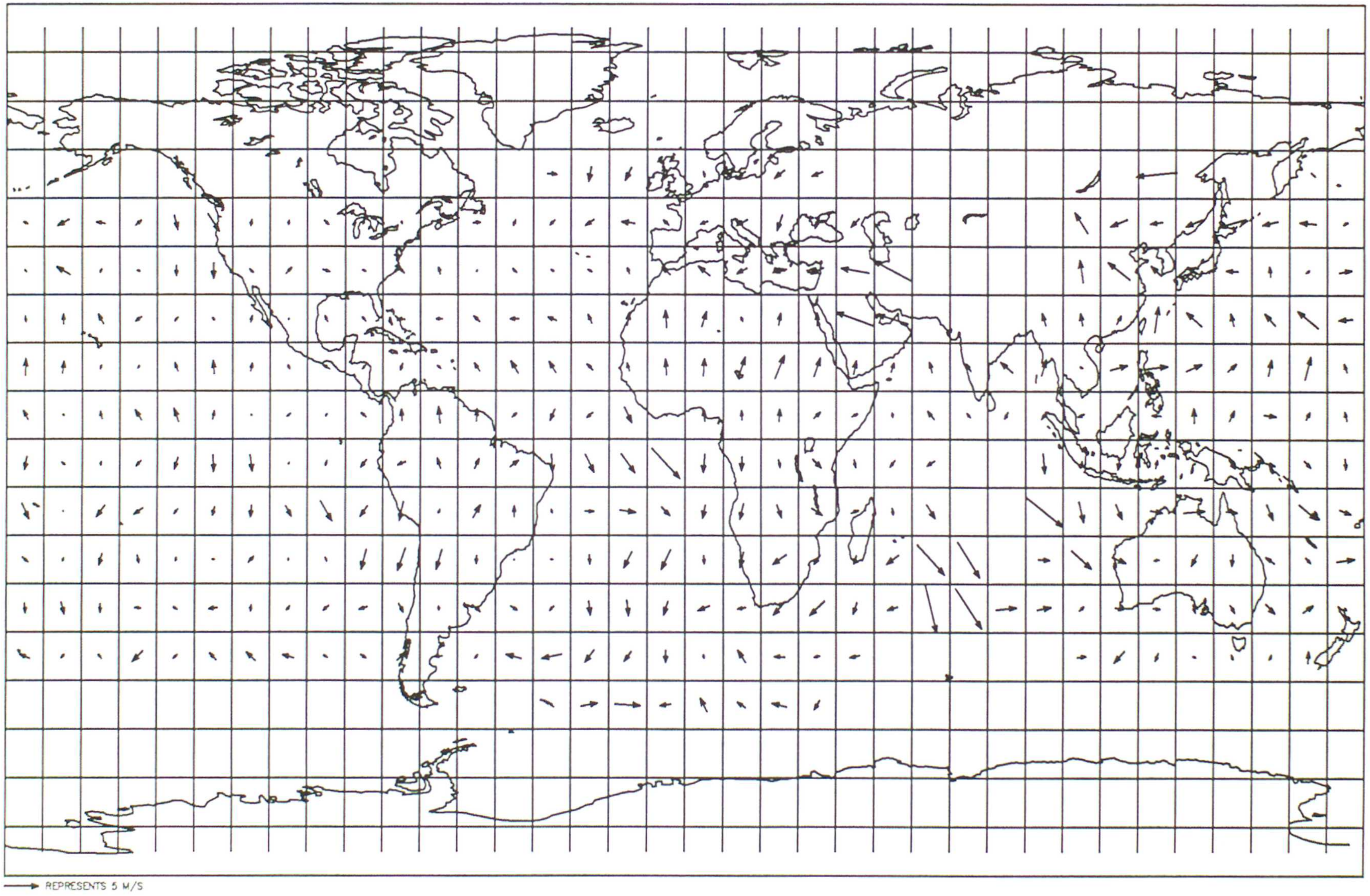
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 101–400 HPA

NOVEMBER 1997

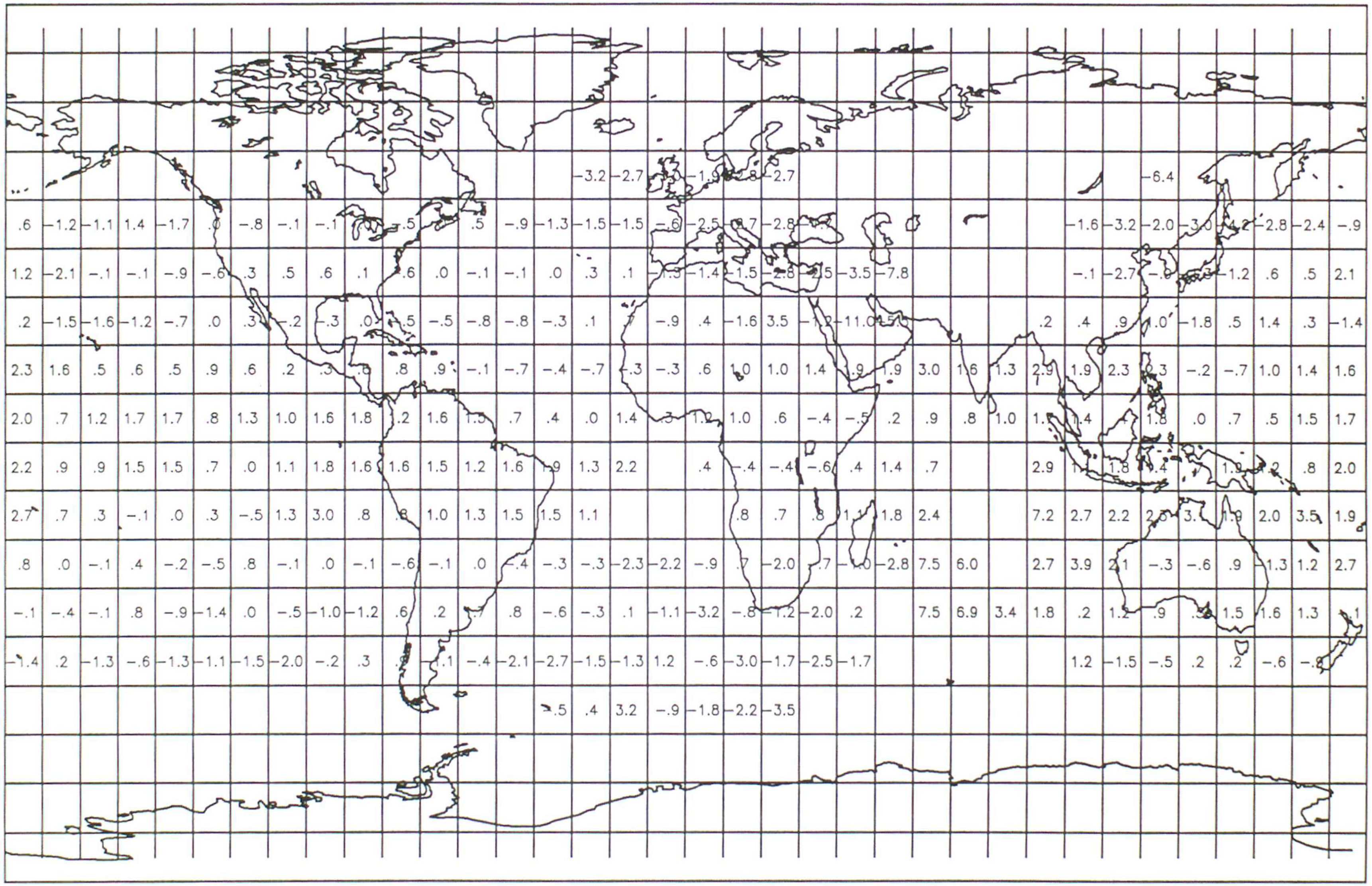
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

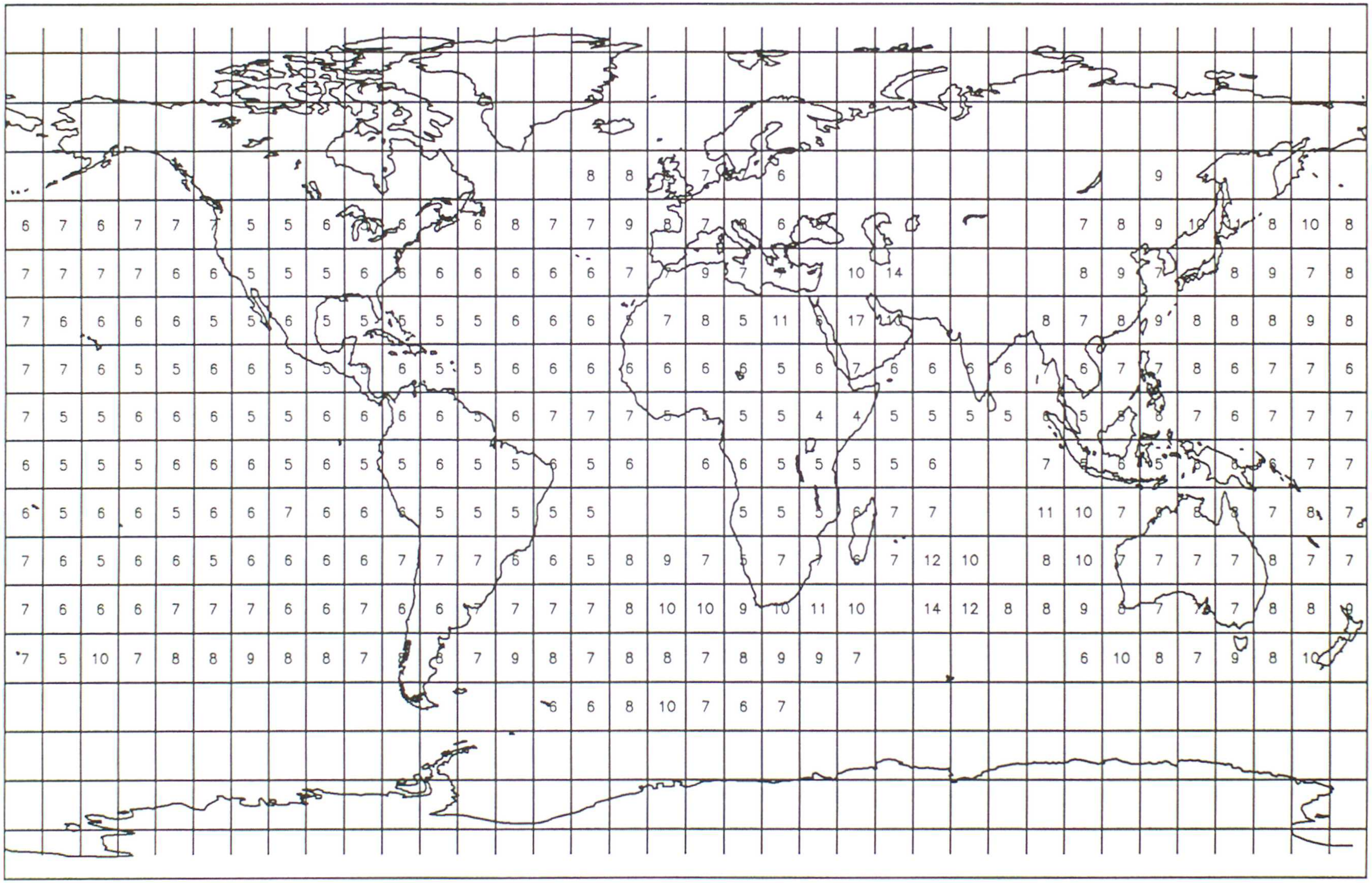
FIGURE 22



SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
NOVEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-3.2 -2.7 -1.9 .8 -2.7 -6.4
.6 -1.2 -1.1 1.4 -1.7 .0 -.8 -.1 -.1 -.5 .5 -.9 -1.3 -1.5 -1.5 -.6 -2.5 .7 -2.8 -1.6 -3.2 -2.0 -3.0 -4.2 -2.8 -2.4 -.9
1.2 -2.1 -.1 -.1 -.9 -.6 .3 .5 .6 .1 .6 .0 -.1 -.1 .0 .3 .1 -1.3 -1.4 -1.5 -2.8 -2.5 -3.5 -7.8 -.1 -2.7 -.9 -.3 -1.2 .6 .5 2.1
.2 -1.5 -1.6 -1.2 -.7 .0 .3 -.2 -.3 .0 -.5 -.5 -.8 -.8 -.3 .1 .7 -.9 .4 -1.6 3.5 -1.2 -11.0 -1.5 .2 .4 .9 1.0 -1.8 .5 1.4 .3 -1.4
2.3 1.6 .5 .6 .5 .9 .6 .2 .3 .3 .8 .9 -.1 -.7 -.4 -.7 -.3 -.3 .6 1.0 1.0 1.4 .9 .9 3.0 1.6 1.3 2.9 1.9 2.3 .3 -.2 -.7 1.0 1.4 1.6
2.0 .7 1.2 1.7 1.7 .8 1.3 1.0 1.6 1.8 .2 1.6 1.5 .7 .4 .0 1.4 -.3 1.2 1.0 .6 -.4 -.5 .2 .9 .8 1.0 1.5 1.4 .4 1.8 .0 .7 .5 1.5 1.7
2.2 .9 .9 1.5 1.5 .7 .0 1.1 1.8 1.6 1.6 1.5 1.2 1.6 .9 1.3 2.2 .4 -.4 -.4 -.6 .4 1.4 .7 2.9 1.1 1.8 .4 1.9 .2 .8 2.0
2.7 .7 .3 -.1 .0 .3 -.5 1.3 3.0 .8 .8 1.0 1.3 1.5 1.5 1.1 .8 .7 .8 1.1 1.8 2.4 7.2 2.7 2.2 2.5 3.1 1.9 2.0 3.5 1.9
.8 .0 -.1 .4 -.2 -.5 .8 -.1 .0 -.1 -.6 -.1 .0 .4 -.3 -.3 -2.3 -2.2 -.9 .7 -2.0 .7 -1.0 -2.8 7.5 6.0 2.7 3.9 2.1 -.3 -.6 .9 1.3 1.2 2.7
-.1 -.4 -.1 .8 -.9 -1.4 .0 -.5 -1.0 -1.2 .6 .2 .7 .8 -.6 -.3 .1 -1.1 -3.2 -.8 -1.2 -2.0 .2 7.5 6.9 3.4 1.8 .2 1.2 .9 .3 1.5 1.6 1.3 .1
-1.4 .2 -1.3 -.6 -1.3 -1.1 -1.5 -2.0 -.2 .3 .8 .1 -.4 -2.1 -2.7 -1.5 -1.3 1.2 -.6 -3.0 -1.7 -2.5 -1.7 1.2 -1.5 -.5 .2 .2 -.6 -.8
.5 .4 3.2 -.9 -1.8 -2.2 -3.5

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
NOVEMBER 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: November, 1997

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-11, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

NO DATA AVAILABLE

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

MEAN SEA LEVEL PRESSURE

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
13903	26.5	-41.2	ALL	MSLP	SUR	261	0	0	0.9	1.0	1.4
13906	22.0	-54.7	ALL	MSLP	SUR	256	0	0	1.0	0.2	1.0
13910	27.3	-48.2	ALL	MSLP	SUR	252	0	0	1.0	-1.2	1.5
13912	17.7	-61.8	ALL	MSLP	SUR	243	0	0	1.1	0.7	1.3
13913	20.4	-52.6	ALL	MSLP	SUR	262	0	0	0.9	0.3	1.0
19971	49.7	-26.2	ALL	MSLP	SUR	5	0	0	0.5	-0.1	0.5
41505	18.6	-56.6	ALL	MSLP	SUR	438	0	0	0.8	0.7	1.1
41506	16.7	-50.6	ALL	MSLP	SUR	433	0	0	0.9	0.4	1.0
41522	11.1	-44.9	ALL	MSLP	SUR	355	0	0	1.0	0.4	1.1
41523	11.5	-51.2	ALL	MSLP	SUR	414	0	0	2.2	4.2	4.7
41524	12.3	-53.0	ALL	MSLP	SUR	441	0	0	0.9	0.3	0.9
41525	11.9	-37.5	ALL	MSLP	SUR	410	0	0	0.9	0.4	1.0
41924	22.2	-44.4	ALL	MSLP	SUR	253	0	0	0.9	-1.4	1.6
44608	53.4	-22.6	ALL	MSLP	SUR	566	0	0	1.4	0.6	1.5
44616	52.5	-45.8	ALL	MSLP	SUR	1084	7	1	1.8	0.4	1.8
44617	51.7	-46.7	ALL	MSLP	SUR	401	3	1	2.3	-0.3	2.4
44621	52.6	-33.5	ALL	MSLP	SUR	688	2	0	1.8	-0.2	1.8
44624	58.1	-12.9	ALL	MSLP	SUR	1287	5	0	1.2	0.3	1.2
44727	57.9	-30.9	ALL	MSLP	SUR	2042	4	0	1.3	0.2	1.4
44728	61.8	-16.4	ALL	MSLP	SUR	1402	3	0	1.3	0.4	1.4
44742	39.1	-18.5	ALL	MSLP	SUR	690	0	0	1.2	0.1	1.2
44743	42.1	-12.2	ALL	MSLP	SUR	630	5	1	1.4	0.2	1.4
44760	34.3	-46.9	ALL	MSLP	SUR	333	0	0	1.3	0.3	1.3
44762	38.6	-16.9	ALL	MSLP	SUR	722	2	0	1.2	0.0	1.2
44763	47.9	-47.6	ALL	MSLP	SUR	664	4	1	2.1	0.3	2.1
44765	58.6	-38.2	ALL	MSLP	SUR	948	3	0	1.6	0.2	1.6
44768	57.4	-27.7	ALL	MSLP	SUR	1432	2	0	1.7	0.2	1.7
44769	50.7	-24.1	ALL	MSLP	SUR	1133	4	0	1.5	-0.1	1.5
44771	52.6	-36.1	ALL	MSLP	SUR	1021	4	0	2.0	0.5	2.1
44773	60.7	-27.4	ALL	MSLP	SUR	1531	4	0	1.3	0.1	1.4
44775	60.9	-38.5	ALL	MSLP	SUR	1516	4	0	1.4	0.2	1.4
44780	55.0	-39.8	ALL	MSLP	SUR	493	3	1	1.7	0.2	1.7
44834	55.4	-52.8	ALL	MSLP	SUR	11	0	0	1.0	1.8	2.0
44901	52.9	-50.1	ALL	MSLP	SUR	78	0	0	2.6	2.1	3.4
44911	56.9	-13.9	ALL	MSLP	SUR	66	0	0	1.0	0.7	1.3
44912	52.2	-31.5	ALL	MSLP	SUR	70	1	1	3.2	2.2	3.9
44925	61.0	-51.6	ALL	MSLP	SUR	119	0	0	1.5	1.1	1.8
51634	44.7	-63.6	ALL	MSLP	SUR	1	0	0	0.0	-2.5	2.5
62515	44.4	-17.0	ALL	MSLP	SUR	213	4	2	4.7	3.7	6.0
62552	57.2	-10.2	ALL	MSLP	SUR	921	6	1	1.5	-0.2	1.6
62553	49.0	-24.3	ALL	MSLP	SUR	714	2	0	1.8	0.2	1.8
62554	53.7	-13.4	ALL	MSLP	SUR	816	0	0	1.2	0.3	1.3
62555	44.9	-16.3	ALL	MSLP	SUR	1085	3	0	1.4	-0.1	1.4
62556	49.7	-22.6	ALL	MSLP	SUR	1268	1	0	1.7	0.2	1.8
62557	46.2	-21.9	ALL	MSLP	SUR	1116	2	0	1.5	0.4	1.6
62558	51.1	-23.1	ALL	MSLP	SUR	1149	0	0	1.5	0.4	1.6
62570	45.0	-14.7	ALL	MSLP	SUR	209	0	0	1.3	0.1	1.3
62697	48.1	-29.0	ALL	MSLP	SUR	874	3	0	1.9	0.0	1.9
62713	38.7	-28.0	ALL	MSLP	SUR	66	1	2	0.7	-0.1	0.7
62804	59.2	-3.1	ALL	MSLP	SUR	428	0	0	0.8	-0.1	0.9
62927	51.9	-21.8	ALL	MSLP	SUR	58	0	0	3.8	0.6	3.8
62929	55.2	-35.0	ALL	MSLP	SUR	32	0	0	2.3	1.4	2.7
64528	58.7	-35.7	ALL	MSLP	SUR	1924	2	0	1.3	-0.2	1.4
64561	53.8	-40.5	ALL	MSLP	SUR	994	7	1	1.8	0.0	1.8
64563	58.8	-50.5	ALL	MSLP	SUR	1827	1	0	1.2	-0.1	1.2
65592	61.0	-34.3	ALL	MSLP	SUR	2	0	0	0.5	0.7	0.9
65594	61.7	-18.8	ALL	MSLP	SUR	2140	3	0	1.2	0.1	1.3
65596	51.2	-42.9	ALL	MSLP	SUR	506	3	1	2.0	-0.6	2.1
65597	57.2	-47.5	ALL	MSLP	SUR	1712	1	0	1.2	-0.1	1.2

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
19971	49.7	-26.2	ALL	SPEED	SUR	5	0	0	1.7	1.7	2.4
41505	18.6	-56.6	ALL	SPEED	SUR	239	0	0	3.3	-0.4	3.3
41506	16.7	-50.6	ALL	SPEED	SUR	235	0	0	1.5	0.4	1.5
41522	11.1	-44.9	ALL	SPEED	SUR	195	1	1	2.2	1.3	2.6
41523	11.5	-51.2	ALL	SPEED	SUR	225	1	0	2.1	1.1	2.4
41524	12.3	-53.0	ALL	SPEED	SUR	239	1	0	1.9	0.4	1.9
41525	11.9	-37.5	ALL	SPEED	SUR	220	0	0	2.0	1.1	2.3
44621	52.6	-33.5	ALL	SPEED	SUR	288	2	1	2.8	-0.4	2.8
44624	58.1	-12.9	ALL	SPEED	SUR	778	1	0	2.1	-1.6	2.6
44742	39.1	-18.5	ALL	SPEED	SUR	518	2	0	2.4	-0.9	2.6
44762	38.6	-16.9	ALL	SPEED	SUR	434	0	0	1.6	-0.7	1.7
44773	60.7	-27.4	ALL	SPEED	SUR	1493	2	0	2.7	0.7	2.8
62552	57.2	-10.2	ALL	SPEED	SUR	899	0	0	2.1	-0.6	2.2
62553	49.0	-24.3	ALL	SPEED	SUR	701	0	0	2.3	-0.8	2.5
62558	51.1	-23.1	ALL	SPEED	SUR	1	0	0	0.0	-12.4	12.4
62559	43.9	-16.9	ALL	SPEED	SUR	604	0	0	1.7	0.6	1.8
62562	49.4	-17.0	ALL	SPEED	SUR	611	0	0	2.0	-0.9	2.2
62563	47.7	-18.9	ALL	SPEED	SUR	187	0	0	6.3	-2.3	6.7
62564	47.9	-18.0	ALL	SPEED	SUR	328	0	0	3.9	-1.0	4.0
62565	53.3	-14.8	ALL	SPEED	SUR	649	0	0	2.2	-0.5	2.2
62566	42.4	-17.0	ALL	SPEED	SUR	567	0	0	1.7	0.7	1.9
62567	47.1	-13.5	ALL	SPEED	SUR	557	0	0	1.8	0.3	1.8
62569	45.0	-14.0	ALL	SPEED	SUR	569	0	0	2.0	0.4	2.1
62570	45.0	-14.7	ALL	SPEED	SUR	507	0	0	2.5	-0.9	2.7
WIND DIRECTION											
19971	49.7	-26.2	ALL	DIRN.	SUR	5	0	0	12.7	-2.3	12.9
41505	18.6	-56.6	ALL	DIRN.	SUR	195	0	0	22.1	-3.7	22.4
41506	16.7	-50.6	ALL	DIRN.	SUR	174	0	0	17.4	8.4	19.3
41522	11.1	-44.9	ALL	DIRN.	SUR	173	1	1	22.4	1.9	22.5
41523	11.5	-51.2	ALL	DIRN.	SUR	187	1	1	23.7	-6.6	24.6
41524	12.3	-53.0	ALL	DIRN.	SUR	200	1	0	19.8	-9.0	21.7
41525	11.9	-37.5	ALL	DIRN.	SUR	203	0	0	22.1	-8.8	23.8
44621	52.6	-33.5	ALL	DIRN.	SUR	260	2	1	23.9	1.7	23.9
44624	58.1	-12.9	ALL	DIRN.	SUR	691	1	0	17.8	5.5	18.6
44742	39.1	-18.5	ALL	DIRN.	SUR	468	2	0	16.4	-6.4	17.6
44762	38.6	-16.9	ALL	DIRN.	SUR	366	0	0	17.1	1.9	17.2
44773	60.7	-27.4	ALL	DIRN.	SUR	1353	2	0	32.3	2.8	32.4
62552	57.2	-10.2	ALL	DIRN.	SUR	781	0	0	22.0	3.3	22.2
62553	49.0	-24.3	ALL	DIRN.	SUR	664	0	0	21.5	5.6	22.3
62558	51.1	-23.1	ALL	DIRN.	SUR	1	0	0	0.0	141.3	141.3
62559	43.9	-16.9	ALL	DIRN.	SUR	589	0	0	14.5	5.1	15.4
62562	49.4	-17.0	ALL	DIRN.	SUR	587	0	0	21.0	20.6	29.4
62563	47.7	-18.9	ALL	DIRN.	SUR	187	0	0	41.1	19.6	45.5
62564	47.9	-18.0	ALL	DIRN.	SUR	327	0	0	30.1	8.3	31.2
62565	53.3	-14.8	ALL	DIRN.	SUR	540	0	0	22.5	3.1	22.7
62566	42.4	-17.0	ALL	DIRN.	SUR	558	0	0	12.7	-5.7	14.0
62567	47.1	-13.5	ALL	DIRN.	SUR	532	0	0	16.3	7.7	18.1
62569	45.0	-14.0	ALL	DIRN.	SUR	556	0	0	18.5	6.5	19.7
62570	45.0	-14.7	ALL	DIRN.	SUR	501	0	0	29.8	5.9	30.4

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:40°N - 70°N, 60°W - 0°W.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.
GROSS ERROR LIMITS	:10.0 °C ; 60 m s^{-1} Vector Wind	
SELECTION CRITERIA	:N REP $\geq$ 20	

NB: US ACARs and ADS data are shown at the bottom of the table as US ACAR and ADS respectively.

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3563	0	1	1.8	-0.1	3589	0	2	0	8.2	0.8
ACA	1215	1	2	1.9	-0.1	1249	0	2	0	7.2	0.4
AEA	228	0	100	3.2	1.5	227	0	15	0	11.7	1.8
AEL	250	2	75	2.1	-0.6	252	0	6	0	10.1	1.6
AEY	34	0	0	1.9	0.6	35	3	3	0	7.7	-0.3
AFL	256	1	3	1.9	0.3	258	0	2	0	7.5	0.7
AFR	1123	1	12	1.8	0.2	1121	1	13	0	8.6	1.3
AIH	170	2	4	2.2	0.3	163	0	4	0	7.9	1.3
AJM	47	0	0	1.8	0.1	41	0	5	0	13.7	-1.6
AMX	191	1	3	2.1	0.4	192	0	5	0	11.1	0.8
ANZ	242	1	2	1.8	-0.9	242	0	4	1	7.2	1.0
AOM	197	2	5	2.0	0.9	188	0	5	0	9.9	1.7
AUA	37	0	0	1.5	-0.7	37	0	3	0	7.6	0.9
AVA	130	3	4	1.9	0.3	131	0	5	0	10.6	1.2
AZA	214	2	4	2.6	0.7	218	0	6	0	10.2	1.3
BAL	312	1	16	2.1	-0.2	310	1	17	0	9.6	0.9
BAW	1412	0	9	2.0	0.2	1426	0	10	0	8.7	1.1
BWA	80	0	100	2.6	1.9	81	1	4	0	10.2	1.1
CDN	311	0	2	1.7	0.7	321	0	2	1	7.7	1.4
CFC	24	0	17	2.1	0.5	24	0	17	0	7.9	-1.7
CFG	659	0	3	2.2	-0.8	672	1	4	0	10.7	0.8
CKS	43	2	7	3.2	1.7	45	0	2	0	9.5	2.7
CKT	59	3	12	1.9	0.7	60	0	12	0	9.7	0.9
CLX	258	0	1	1.7	-0.5	256	0	3	1	6.9	-0.1
CMM	72	8	8	1.6	-0.1	71	0	1	0	7.4	1.6
COA	871	1	3	2.0	0.4	876	0	6	0	11.6	1.8
CRL	118	2	2	1.5	0.3	124	2	2	0	8.5	1.9
CSA	24	0	0	1.5	-0.7	24	0	0	0	3.7	0.2
CTB	169	1	2	1.9	0.3	175	0	2	0	9.5	1.0
CUB	201	0	11	2.6	1.2	200	1	13	0	13.9	1.3
DAL	2415	0	1	1.9	-0.2	2440	0	3	0	8.8	1.0
DBY	65	0	2	1.5	-0.2	66	0	3	0	10.4	0.0
DHL	297	8	100	4.4	-2.8	297	0	68	0	12.5	2.4
DLH	2494	0	11	1.9	0.1	2491	0	13	1	8.1	1.0
DOA	25	0	0	1.3	-0.1	25	0	0	0	9.9	-1.0
EIA	26	0	0	1.5	0.3	28	0	29	0	16.1	7.3
ELY	153	1	6	1.7	-0.4	157	0	10	0	10.1	1.7
EWW	165	0	100	2.9	1.2	165	1	100	0	15.2	2.4
FDX	206	0	1	1.7	0.4	208	0	2	0	9.7	1.3
FFF	33	0	33	1.2	-0.4	33	24	85	0	35.6	0.7
FIN	386	0	4	1.8	0.5	383	0	5	1	8.1	0.7
GAF	40	0	3	2.4	0.2	42	0	5	2	9.2	-0.9
GTI	40	0	5	2.5	1.0	42	0	2	0	9.7	1.9
HLF	115	2	3	1.8	-0.7	112	1	4	0	10.0	0.1
IBE	933	2	18	2.3	0.5	936	0	18	0	10.9	1.1
ICE	745	0	1	1.7	0.0	739	0	3	1	7.8	0.9
JAL	22	0	0	1.6	1.0	22	0	0	0	7.7	1.9
KLM	2236	0	2	1.8	0.0	2253	0	2	0	8.2	0.7
LDA	144	0	17	1.7	-0.9	150	0	21	0	9.4	1.4
LDI	273	1	70	2.5	1.1	278	1	22	0	9.8	-0.2
LEI	132	2	4	1.7	0.3	136	0	6	0	9.7	1.6
LIB	84	0	2	2.0	0.8	84	1	5	0	10.3	2.5
LKR	22	0	9	1.6	0.4	23	0	13	0	8.0	-0.5
LOT	129	1	2	2.0	-1.3	130	0	2	0	8.0	0.6
LTU	588	0	3	1.8	0.2	586	1	5	0	9.3	0.8
MPD	60	0	3	2.6	1.8	60	0	2	0	11.0	1.3
MPH	520	0	3	1.9	-0.5	527	0	3	0	9.5	0.9
NWA	2239	0	2	2.0	0.7	2308	0	2	0	8.4	1.0
OAL	30	0	7	3.3	2.8	31	0	0	0	5.0	-0.7

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
PAC	47	2	11	1.8	0.5	48	0	17	0	14.2	-0.7
RAM	48	0	2	1.8	-0.7	48	0	4	0	11.3	1.4
RCH	160	3	100	2.5	1.1	166	0	100	0	10.9	1.3
RJA	44	2	7	1.9	0.6	44	0	7	0	7.8	-0.1
ROY	36	0	6	1.9	0.4	36	0	11	0	13.9	0.5
RRR	76	3	13	2.0	0.7	78	0	14	1	6.4	1.2
SAB	34	0	0	1.8	-0.1	34	0	3	0	8.7	-0.3
SAS	1019	0	1	1.9	0.2	1017	0	2	1	7.2	0.4
SIA	92	0	10	1.9	-0.7	100	1	11	0	7.5	-0.1
SLR	78	0	21	2.1	-0.3	81	0	20	0	8.2	2.0
SPP	45	0	2	1.9	0.0	44	2	5	0	10.3	2.3
SVA	122	0	3	1.5	-0.1	125	1	100	0	13.3	2.9
SWR	110	0	3	1.4	0.0	112	0	4	0	8.3	1.5
TAP	249	1	3	1.7	-0.3	246	1	4	0	10.1	0.9
TOW	76	0	4	2.4	-0.5	77	1	4	0	8.3	0.2
TSC	26	0	4	1.7	0.9	26	0	4	0	6.5	0.1
TWA	1294	0	2	2.0	0.4	1297	1	4	0	9.2	0.6
UAL	1874	0	1	1.9	-0.1	1889	0	2	0	7.6	0.8
ULE	33	0	36	1.8	0.3	33	0	36	0	11.3	2.4
UNS	26	0	81	1.7	0.3	26	0	81	0	8.5	1.4
UPS	369	2	16	1.7	0.2	376	0	16	0	8.6	0.9
USA	311	0	0	1.8	0.4	312	0	2	0	9.0	1.3
VIR	288	1	3	1.9	-0.4	280	0	4	0	9.3	1.1
VKG	45	0	7	2.6	1.6	44	0	9	2	9.3	1.7
WOA	53	0	9	2.2	0.7	53	0	9	0	7.7	1.6
BA	5008	0	0	1.8	0.5	5005	0	0	0	7.0	1.4
KL	3941	0	0	2.1	0.7	3940	0	0	0	6.3	0.8
LH	626	0	1	2.4	0.5	626	0	1	0	6.7	1.1
N	343	1	3	2.5	1.1	352	0	3	0	9.1	-0.2
ADS	200	0	0	1.3	-0.3	200	0	0	0	5.7	0.5
US ACAR	10954	0	0	2.0	0.3	10952	0	0	0	7.4	1.0

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
CGDX	00	Z	100	1	0	0.0	19.0	19.0
DBBH	00	Z	100	1	0	0.0	6.0	6.0
DBBH	12	Z	100	15	0	14.7	18.9	11.8
DBLK	00	Z	100	1	0	0.0	24.0	24.0
FNOR	00	Z	100	9	0	14.0	16.6	8.9
FNOR	12	Z	100	10	0	14.9	16.6	7.4
FNOU	00	Z	100	13	0	14.2	22.4	17.3
FNOU	12	Z	100	15	0	18.6	28.4	21.5
FNPH	00	Z	100	12	0	18.6	23.1	13.7
FNPH	12	Z	100	9	0	34.2	34.3	-0.8
FNRS	00	Z	100	11	0	56.6	57.0	-6.9
FNRS	12	Z	100	9	0	16.7	26.2	20.2
JBOA	00	Z	100	1	0	0.0	4.0	4.0
JCCX	00	Z	100	1	0	0.0	47.0	47.0
JDWX	00	Z	100	1	0	0.0	38.0	38.0
LDWR	00	Z	100	28	0	15.4	15.5	-1.6
LDWR	12	Z	100	28	0	14.4	14.5	1.7
OXVH2	00	Z	100	21	0	30.9	32.0	-8.2
OXVH2	12	Z	100	18	0	17.7	18.8	6.3
OXYH2	00	Z	100	13	0	11.7	12.0	-2.6
OXYH2	12	Z	100	10	0	20.3	24.3	13.4
SHIPAF	00	Z	100	1	0	0.0	13.0	13.0
SHIPAF	12	Z	100	1	0	0.0	39.0	39.0
SHIPS	00	Z	100	4	0	17.7	18.3	-4.5
V2VM	00	Z	100	14	0	13.6	14.6	5.2
V2VM	12	Z	100	10	0	20.8	23.6	11.0
V2XM	00	Z	100	7	0	82.6	97.1	51.0
V2XM	12	Z	100	12	0	29.8	32.6	13.2
WTEC	00	Z	100	7	0	14.3	20.4	-14.6
WTEC	12	Z	100	8	0	11.0	17.0	-13.0
WTEU	00	Z	100	1	0	0.0	44.0	44.0
XXBA	12	Z	100	3	0	26.2	67.6	62.3
03953	00	Z	100	28	0	14.3	14.4	1.6
03953	12	Z	100	27	0	15.3	15.8	-3.8
04018	00	Z	100	30	0	21.9	21.9	0.2
04018	12	Z	100	29	0	16.5	16.8	3.3
04220	00	Z	100	30	0	14.0	16.6	9.0
04220	12	Z	100	28	0	15.2	22.1	16.1
04270	00	Z	100	27	0	13.4	13.9	3.4
04270	12	Z	100	28	0	15.5	20.2	12.9
04339	00	Z	100	29	0	16.7	19.2	9.4
04339	12	Z	100	27	0	16.7	20.4	11.8
04360	00	Z	100	30	0	12.9	13.6	4.4
04360	12	Z	100	27	0	16.4	20.6	12.5
08001	00	Z	100	24	0	24.6	24.6	-0.8
08001	12	Z	100	24	0	16.5	16.5	-1.0
08508	00	Z	100	29	0	19.1	19.5	3.9
08508	12	Z	100	27	1	15.5	24.1	18.5
08522	00	Z	100	1	0	0.0	14.0	-14.0
08522	12	Z	100	25	0	14.6	27.1	22.8
60020	00	Z	100	29	0	15.3	25.5	20.4
60020	12	Z	100	29	0	23.6	28.4	15.8
71600	00	Z	100	29	0	14.0	19.6	13.7
71600	12	Z	100	29	0	16.0	18.3	8.7
72201	00	Z	100	25	0	12.3	15.1	8.8
72201	12	Z	100	25	0	13.5	17.2	10.8
72402	00	Z	100	20	0	26.9	27.1	-3.1
72402	12	Z	100	26	0	24.4	24.5	-2.3
74494	00	Z	100	21	0	23.0	23.2	-3.2
74494	12	Z	100	26	0	77.6	80.5	-21.3
78016	00	Z	100	27	0	18.6	22.6	12.9
78016	12	Z	100	29	0	10.4	14.8	10.4

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
CGDX	00	Z	500	1	0	0.0	6.0	6.0
DBBH	00	Z	500	1	0	0.0	22.0	22.0
DBBH	12	Z	500	20	0	7.0	15.3	13.6
DBLK	00	Z	500	1	0	0.0	31.0	31.0
FNOR	00	Z	500	10	0	14.7	15.6	5.1
FNOR	12	Z	500	11	0	13.3	18.2	12.5
FNOU	00	Z	500	13	0	11.6	18.2	14.0
FNOU	12	Z	500	15	0	10.7	23.0	20.3
FNPH	00	Z	500	13	0	17.9	19.3	7.2
FNPH	12	Z	500	10	0	26.2	26.3	2.6
FNRS	00	Z	500	12	0	14.7	14.7	0.2
FNRS	12	Z	500	10	0	6.4	16.7	15.4
JBOA	00	Z	500	1	0	0.0	16.0	16.0
JCCX	00	Z	500	1	0	0.0	16.0	16.0
JDWX	00	Z	500	1	0	0.0	10.0	10.0
LDWR	00	Z	500	28	0	11.7	15.9	10.7
LDWR	12	Z	500	28	0	10.2	11.1	4.3
OXVH2	00	Z	500	21	0	27.9	28.0	-2.2
OXVH2	12	Z	500	18	0	13.8	14.3	3.7
OXYH2	00	Z	500	14	0	11.5	11.9	3.0
OXYH2	12	Z	500	11	0	15.5	16.6	5.8
SHIPAF	00	Z	500	2	0	13.0	17.7	12.0
SHIPAF	12	Z	500	1	0	0.0	7.0	7.0
SHIPS	00	Z	500	4	0	4.3	17.1	16.5
V2VM	00	Z	500	15	0	10.5	10.5	0.4
V2VM	12	Z	500	12	0	13.8	13.9	1.8
V2XM	00	Z	500	8	0	13.2	21.6	17.1
V2XM	12	Z	500	12	0	38.3	38.3	1.1
WTEC	00	Z	500	7	0	9.2	11.7	-7.3
WTEC	12	Z	500	8	0	7.5	9.9	-6.5
WTEU	00	Z	500	1	0	0.0	38.0	38.0
XXBA	12	Z	500	6	0	15.9	22.9	16.5
03953	00	Z	500	30	0	12.0	14.6	8.3
03953	12	Z	500	27	0	13.4	13.9	3.7
04018	00	Z	500	30	0	11.3	14.9	9.7
04018	12	Z	500	29	0	8.3	12.2	9.0
04220	00	Z	500	30	0	10.9	12.5	6.0
04220	12	Z	500	28	0	14.8	15.6	4.8
04270	00	Z	500	29	0	12.8	16.0	9.6
04270	12	Z	500	29	0	11.2	13.8	8.1
04339	00	Z	500	29	0	12.5	16.8	11.2
04339	12	Z	500	27	0	14.9	16.9	8.0
04360	00	Z	500	30	0	12.1	13.0	4.6
04360	12	Z	500	27	0	10.8	11.4	3.7
08001	00	Z	500	26	0	11.5	11.9	2.8
08001	12	Z	500	26	0	12.8	12.9	0.8
08508	00	Z	500	29	0	11.8	12.9	5.1
08508	12	Z	500	28	0	19.3	22.4	11.4
08522	00	Z	500	1	0	0.0	5.0	5.0
08522	12	Z	500	28	0	8.3	25.1	23.8
60020	00	Z	500	29	0	11.9	24.7	21.7
60020	12	Z	500	29	0	21.2	32.1	24.1
71600	00	Z	500	29	0	10.7	13.7	8.5
71600	12	Z	500	29	0	13.6	13.7	1.7
72201	00	Z	500	26	0	6.3	14.4	13.0
72201	12	Z	500	26	0	6.0	10.6	8.8
72402	00	Z	500	26	0	13.8	13.9	-1.2
72402	12	Z	500	27	0	15.1	19.4	-12.3
74494	00	Z	500	28	0	16.0	16.3	3.0
74494	12	Z	500	28	0	18.3	20.5	-9.1
78016	00	Z	500	26	0	10.9	24.0	21.3
78016	12	Z	500	29	0	6.9	17.0	15.5

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
CGDX	00	V	100	1	0	0	3.4	-1.0	0.7
DBBH	00	V	100	1	0	0	2.0	1.3	3.3
DBBH	12	V	100	13	0	7	2.0	-1.0	0.2
DBLK	00	V	100	1	0	0	3.9	-2.9	-1.1
FNOR	00	V	100	7	0	0	4.1	-1.0	1.3
FNOR	12	V	100	10	0	0	4.1	-0.1	3.6
FNOU	00	V	100	8	0	0	3.5	-1.0	-1.5
FNOU	12	V	100	14	0	0	3.5	-0.6	0.1
FNPH	00	V	100	12	0	0	4.2	-0.2	2.1
FNPH	12	V	100	5	0	0	5.0	-2.7	3.0
FNRS	00	V	100	4	0	0	5.0	-0.7	2.7
FNRS	12	V	100	8	0	0	5.0	0.4	1.5
JBOA	00	V	100	1	0	0	5.0	-0.8	2.3
JCCX	00	V	100	1	0	0	2.7	-1.3	-2.3
JDWX	00	V	100	1	0	0	2.7	-1.2	2.1
LDWR	00	V	100	15	0	0	2.7	0.5	-0.2
LDWR	12	V	100	16	0	0	1.8	0.5	0.2
OXVH2	00	V	100	7	0	0	2.0	-1.8	0.0
OXVH2	12	V	100	4	0	0	2.0	-2.9	2.0
OXYH2	00	V	100	12	0	0	2.0	0.2	0.4
OXYH2	12	V	100	10	0	0	1.6	-0.6	-0.2
V2VM	00	V	100	11	0	0	1.9	0.1	1.6
V2VM	12	V	100	9	0	0	12.2	-1.9	-2.0
V2XM	00	V	100	6	0	0	12.2	0.7	-0.7
V2XM	12	V	100	10	0	0	12.2	-1.0	-1.3
WTEC	00	V	100	5	0	0	3.1	-0.9	-0.5
WTEC	12	V	100	7	0	0	3.1	1.1	-0.4
WTEU	00	V	100	1	0	100	4.3	-3.1	2.4
03953	00	V	100	28	0	0	2.7	-0.2	0.1
03953	12	V	100	27	0	0	2.4	-0.8	0.9
04018	00	V	100	27	0	0	2.4	0.5	1.5
04018	12	V	100	26	0	0	3.1	-0.9	0.6
04220	00	V	100	27	0	0	2.0	-0.6	1.2
04220	12	V	100	23	0	0	2.6	-0.6	1.6
04270	00	V	100	23	0	0	3.0	-1.1	0.7
04270	12	V	100	26	0	0	2.7	-0.9	0.4
04339	00	V	100	24	0	4	2.5	0.5	0.0
04339	12	V	100	25	0	0	3.8	0.5	-0.4
04360	00	V	100	27	0	0	2.8	-1.3	0.1
04360	12	V	100	26	0	0	3.0	-1.3	0.5
08001	00	V	100	14	0	0	6.9	-2.1	0.8
08001	12	V	100	17	0	0	5.3	-1.0	0.4
08508	00	V	100	27	0	0	3.9	0.2	0.3
08508	12	V	100	27	0	0	3.3	0.6	0.1
60020	00	V	100	25	0	0	2.2	1.4	-0.9
60020	12	V	100	25	0	0	6.0	-0.4	0.0
71600	00	V	100	29	0	0	2.6	0.8	0.2
71600	12	V	100	29	0	0	3.4	0.3	0.1
72201	00	V	100	25	0	0	3.5	-0.2	-0.3
72201	12	V	100	24	0	0	3.5	0.4	-0.2
72402	00	V	100	19	0	0	4.0	-0.6	0.9
72402	12	V	100	26	0	0	4.0	-0.5	1.1
74494	00	V	100	19	0	0	3.8	-0.7	1.6
74494	12	V	100	25	0	0	2.5	-1.0	-0.1
78016	00	V	100	25	0	0	5.4	-0.6	2.4
78016	12	V	100	29	0	0	3.1	0.1	2.0

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in $m\ s^{-1}$
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
CGDX	00	V	500	1	0	0	2.9	-1.6	0.9
DBBH	00	V	500	1	0	0	4.9	4.0	1.2
DBBH	12	V	500	18	0	0	4.9	-0.2	0.5
DBLK	00	V	500	1	0	0	4.1	0.1	0.9
FNOR	00	V	500	9	0	0	4.5	0.1	-1.1
FNOR	12	V	500	11	0	0	4.6	0.9	0.3
FNOU	00	V	500	12	0	0	5.4	0.3	0.2
FNOU	12	V	500	13	0	0	3.2	-1.7	0.2
FNPH	00	V	500	11	0	0	3.2	0.5	0.1
FNPH	12	V	500	5	0	0	3.7	-2.0	0.9
FNRS	00	V	500	7	0	0	3.7	0.6	0.4
FNRS	12	V	500	7	0	0	3.7	-0.8	0.6
JBOA	00	V	500	1	0	0	3.7	-2.3	-1.9
JCCX	00	V	500	1	0	0	4.4	-0.3	1.4
JDWX	00	V	500	1	0	0	4.4	-0.5	-0.9
LDWR	00	V	500	17	0	0	4.4	2.0	0.1
LDWR	12	V	500	19	0	0	3.0	0.0	-0.4
OXVH2	00	V	500	7	0	0	2.3	0.3	-1.3
OXVH2	12	V	500	5	0	0	2.3	2.9	-0.7
OXYH2	00	V	500	13	0	7	2.3	0.5	1.5
OXYH2	12	V	500	11	0	0	4.6	-1.0	0.9
V2VM	00	V	500	13	0	0	2.6	-1.2	-1.1
V2VM	12	V	500	10	0	0	3.4	0.4	1.3
V2XM	00	V	500	7	0	0	4.8	-1.4	-0.6
V2XM	12	V	500	11	0	0	4.8	-1.5	-0.9
WTEC	00	V	500	6	0	0	4.5	0.4	0.4
WTEC	12	V	500	8	0	0	4.5	0.0	0.0
03953	00	V	500	29	0	0	3.1	-1.2	-0.6
03953	12	V	500	27	0	0	3.3	-0.7	-0.1
04018	00	V	500	26	0	0	4.4	-1.6	-0.2
04018	12	V	500	27	0	3	4.6	0.3	-0.2
04220	00	V	500	30	0	3	2.8	0.2	2.2
04220	12	V	500	26	0	0	5.9	-0.5	-0.3
04270	00	V	500	27	0	0	3.6	1.9	0.0
04270	12	V	500	27	0	0	4.1	0.0	0.3
04339	00	V	500	24	0	0	4.6	0.1	0.0
04339	12	V	500	27	0	0	4.1	1.5	-1.3
04360	00	V	500	25	0	4	4.2	0.4	0.1
04360	12	V	500	27	0	0	4.4	0.1	-0.4
08001	00	V	500	18	0	0	4.3	0.1	2.2
08001	12	V	500	23	0	0	4.6	2.1	-0.2
08508	00	V	500	26	0	0	3.0	0.4	-0.3
08508	12	V	500	26	0	0	5.2	0.4	0.8
60020	00	V	500	26	0	3	2.6	-2.3	-1.2
60020	12	V	500	25	0	0	5.1	-0.5	-0.8
71600	00	V	500	28	0	0	3.5	2.9	1.4
71600	12	V	500	29	0	0	4.8	1.3	0.4
72201	00	V	500	26	0	0	4.5	-0.6	-2.2
72201	12	V	500	26	0	0	2.4	-0.1	-1.2
72402	00	V	500	25	0	0	3.4	1.1	0.9
72402	12	V	500	27	0	0	4.2	1.5	0.0
74494	00	V	500	28	0	0	3.0	-0.7	-0.4
74494	12	V	500	28	0	0	3.1	0.2	1.0
78016	00	V	500	26	0	0	3.6	0.6	1.2
78016	12	V	500	28	0	0	3.1	0.0	0.5

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45